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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 284

	Admiral models T1801, N, T1802, N, T1806, N and T1807, N (Ch. 17XP3) were covered in Photofact Folder 2 – Set 284. Models TS1801, TS1802, TS1806 and TS1807 (Ch. 17SX3) and late production changes were added with the publication of Production Change Bulletin 140 – Set 300-1. Models T18A1, T18A2, T18A3 (Ch. 17X3Z), TS18A1, TS18A2 and TS18A3 (Ch. 17SX3Z) are added along with late production changes with the publication of this bulletin.
Ch. 17X3Z	Chassis 17X3Z is electrically identical to chassis 17XP3, except for the following changes. NEW VHF TUNER Chassis 17X3Z uses a new improved cascode tuner (part #94D97-1). A schematic of this tuner is given in Fig. 1. Alignment procedure will be the same as the alignment given for tuner 94D91-1 in Production Change Bulletin 140 – Set 300-1. NEW AGC CIRCUIT The AGC circuit has been revised. A partial schematic is given in Fig. 2 showing the new arrangement. COMPONENT CHANGE A .005MFD capacitor added from pin 1 of V9 to ground. A 27KΩ, 1 watt resistor added from pin 1 of V9 to ground. R31 is increased from 6.2KΩ to 7.5KΩ. R83 is decreased from 100KΩ to 82KΩ. C12 and C13 are decreased from 1000MMF to 800MMF. An RF choke coil (part #73A24-2) is added from pin 8 of V5B to L19. The sound take-off is moved from pin 8 of V5B to the junction of the new coil and L19.
Ch. 17SX3Z	Chassis 17SX3Z is electrically identical to chassis 17SX3, except a 17AVP4A picture tube is employed.
Ch. 17X3Z (Run 2)	The following production changes apply to the chassis so designated. COMPONENT LOCATION CHANGE R92, formerly connected from pin 7 of V14 to pin 8 of V15 is now connected from pin 7 of V15 to one side of the on-off switch.
Ch. 17SX3Z (Run 5)	TO PREVENT CAPACITOR FAILURE The voltage rating of C78 is increased from 600 Volts to 1000 Volts. In early production, C78 may be two .1MFD 600V capacitors connected in series.
Ch. 17SX3, Z 17XP3, 17X3Z (Run 10)	TO IMPROVE VERTICAL LINEARITY C63 is increased from 4700MMF to .015MFD, 600V. R68 is decreased from 820KΩ to 470KΩ. R3, vertical hold control, is decreased from 2Meg to 1Meg (new part #75C20-29).

ADMIRAL MODELS T18A1, T18A2, T18A3 (Ch. 17X3Z), TS18A1, TS18A2, TS18A3 (Ch. 17SX3Z), T1801, N, T1802, N, T1806, N, T1807, N (Ch. 17XP3), TS1801, TS1802, TS1806, TS1807 (Ch. 17SX3)

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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	SELENIUM RECTIFIERS REPLACE 3AL5 A dual selenium rectifier assembly (part #93A5-1) is used as an alternate for the horizontal AFC (3AL5). This assembly is mounted on a standard seven pin miniature tube base and is directly interchangeable with the 3AL5 when used as the horizontal AFC.
Ch. 17SX3, 17SX3Z	TO IMPROVE SENSITIVITY ON UHF The 6.8Ω resistor connected from pin 2 of the UHF oscillator to ground is increased to 10KΩ. The 3MMF capacitor connected from pin 2 of the UHF oscillator to ground is increased to 3.6MMF.
Ch. 17SX3, 17SX3Z	TO IMPROVE THE CUT-OFF CHARACTERISTICS OF THE 4BZ7 Pin 9, shield, of the 4BZ7 (RF Amp.) formerly connected to ground is now connected to the junction of the 1.5Ω resistor and the 47MMF capacitor (terminal 7 of the tuner strip).
Ch. 17SX3Z (Run 2 or higher)	COMPONENT CHANGE R21 is decreased from 15Meg to 1.5Meg. R19 is decreased from 1Meg to 680KΩ.
Ch. 17SX3, 17SX3Z	COMPONENT CHANGE R23 is decreased from 2.4KΩ to 1.2KΩ. R17 is increased from 1KΩ, 1/2 watt to 4KΩ, 7 watts. R25 is increased from 47Ω to 68Ω. R26 is decreased from 16KΩ to 7.5KΩ. R27 is increased from 330Ω to 1KΩ. R28 is decreased from 220KΩ to 1KΩ. R39 is increased from 470Ω to 1.5KΩ. R92 is decreased from 47Ω to 39Ω. C27 is increased from 15MMF to 72 MMF. C28 is decreased from 5000MMF to 15MMF. C31 is decreased from 5000MMF to 1000MMF. R31 is increased from 6.2KΩ to 16KΩ. R32 is increased from 330Ω to 1KΩ.

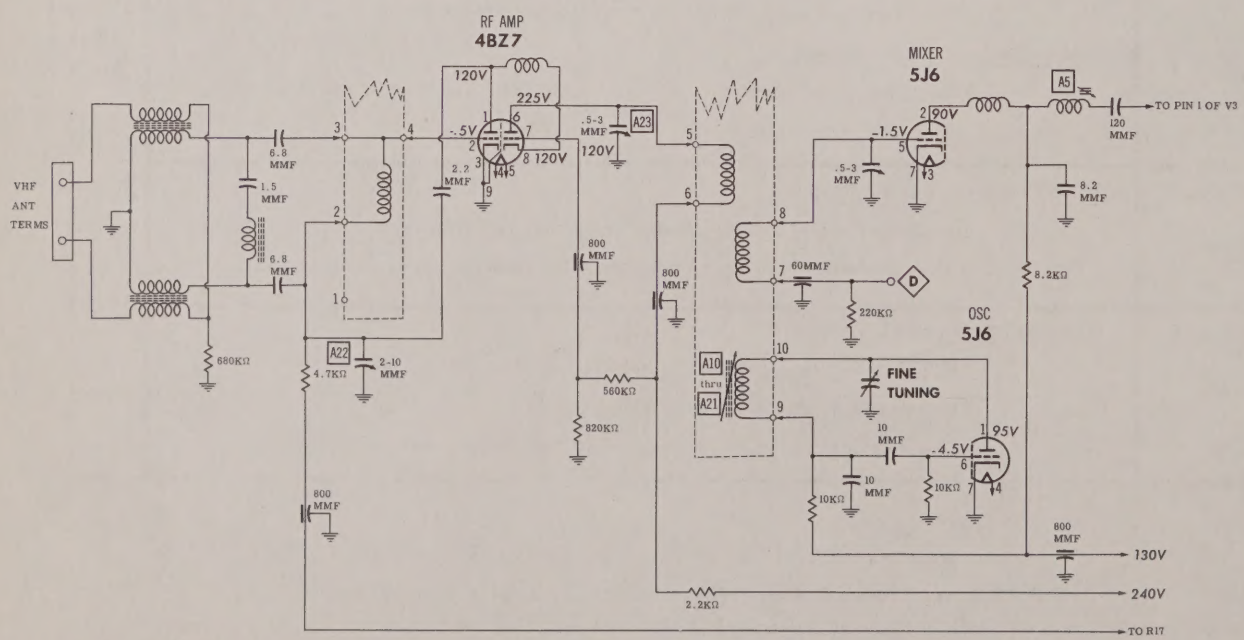

FIG. 1

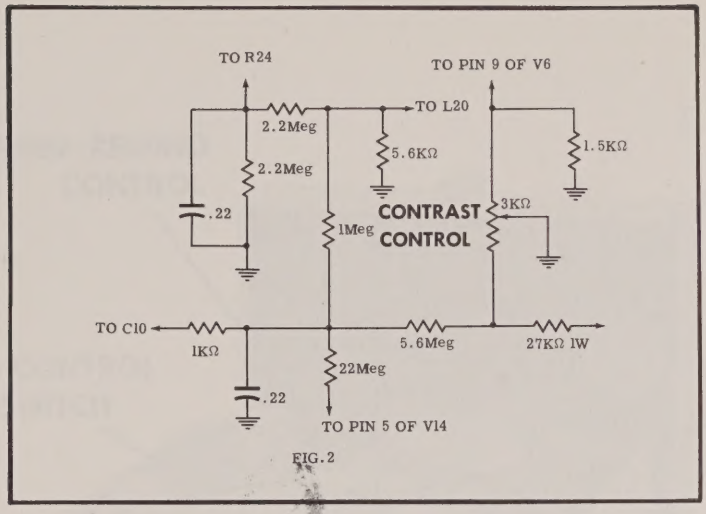

FIG. 2

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 269

Motorola Chassis TS-418, Y, VTS-418, Y, VTS-518, Y and WTS-518, Y were covered in Photofact Folder 9 — Set 269.

Later production changes and model additions were added with the publication of Production Change Bulletin 124 in Set 280-1.

Several new models and chassis have since been added. Following is a list of all models and chassis along with the latest production changes.

MODEL	CHASSIS	MODEL	CHASSIS
Y17T20	TS-418Y	17T20M	VTS-418
Y17T20B	VTS-418Y	17T21	TS-418
Y17T20E	VTS-418Y	17T22B	VTS-418
Y17T20M	VTS-418Y	17T22E	VTS-418
Y17T21	TS-418Y	17T23	TS-418
Y17T22B	VTS-418Y	17T23B	TS-418
Y17T22E	VTS-418Y	17T24CH	RTS-418
Y17T23	TS-418Y	17T25GR	PTS-418
Y17T23B	TS-418Y	17T25TN	PTS-418
Y21K19	WTS-518Y	17T25BL	PTS-418
Y21K19B	WTS-518Y	17T26WH	TS-421
Y21K26	VTS-518Y	17T26PK	TS-421
Y21K26B	VTS-518Y	21K19	WTS-518
Y21T15	WTS-518YA-02	21K19B	WTS-518
Y21T16	WTS-518Y	21K26	VTS-518
Y21T16B	WTS-518Y	21K26B	VTS-518
Y21T16E	WTS-518Y	21T15	WTS-518
Y21T17	VTS-518Y	21T16	WTS-518
Y21T17B	VTS-518Y	21T16B	WTS-518
17T20	TS-418	21T16E	WTS-518
17T20B	VTS-418	21T17	VTS-518
17T20E	VTS-418	21T17B	VTS-518

Ch. PTS-418

CHASSIS IDENTIFICATION

Chassis PTS-418 is electrically identical to chassis TS-418, except the brightness, vertical hold and horizontal hold controls mount to the front panel of the chassis.

Ch. RTS-418

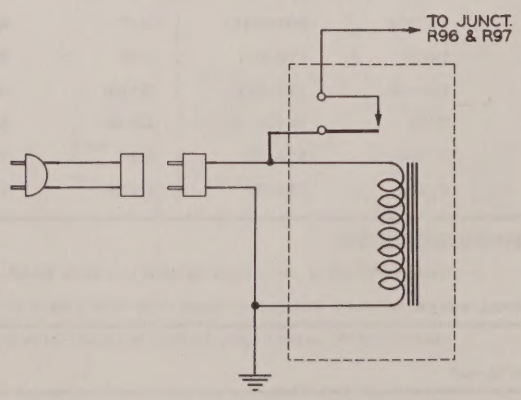
Chassis RTS-418 is electrically identical to chassis PTS-418, except a 17HP4 picture tube is used.

Ch. TS-521

Chassis TS-421 is electrically identical to chassis TS-418, except for the addition of an electric clock. A partial schematic is given on the reverse side showing the new circuit arrangement.

MOTOROLA MODELS Y17T20, B,E,M,Y17T21,Y17T22B,E,Y17T23,B,Y21K19,B,Y21K26,B,Y21T15,Y21T16,B,E,Y21T17,B,17T20,B,E,M,17T21,17T22B,E,17T23,B,17T24CH, 17T25BL,GR,TN,17T26PK,WH,21K19B,21K26,B,21T15,21T16B,E,21T17,B(Ch. PTS-418, RTS-418, TS-418, Y, TS-421, VTS-418, Y, VTS-518, Y, WTS-518, Y, YA-02)

	ALTERNATE CONTROLS Some models may use an alternate contrast and volume control (R1), part #18K737326. In chassis TS-421 the contrast and volume control is changed to part #18B737619. Some models may use an alternate horizontal hold control (R2), part #18K735220.
	ALTERNATE SPEAKER Some models may use an alternate speaker, part #50K737291.
Chassis Coded B-04	TO IMPROVE HORIZONTAL ADJUSTMENT The two pin horizontal oscillator test socket is replaced by a 3 pin test socket.
Chassis Coded C-00	Electrically the chassis remains the same as chassis coded B-04. The difference is in the location of controls.



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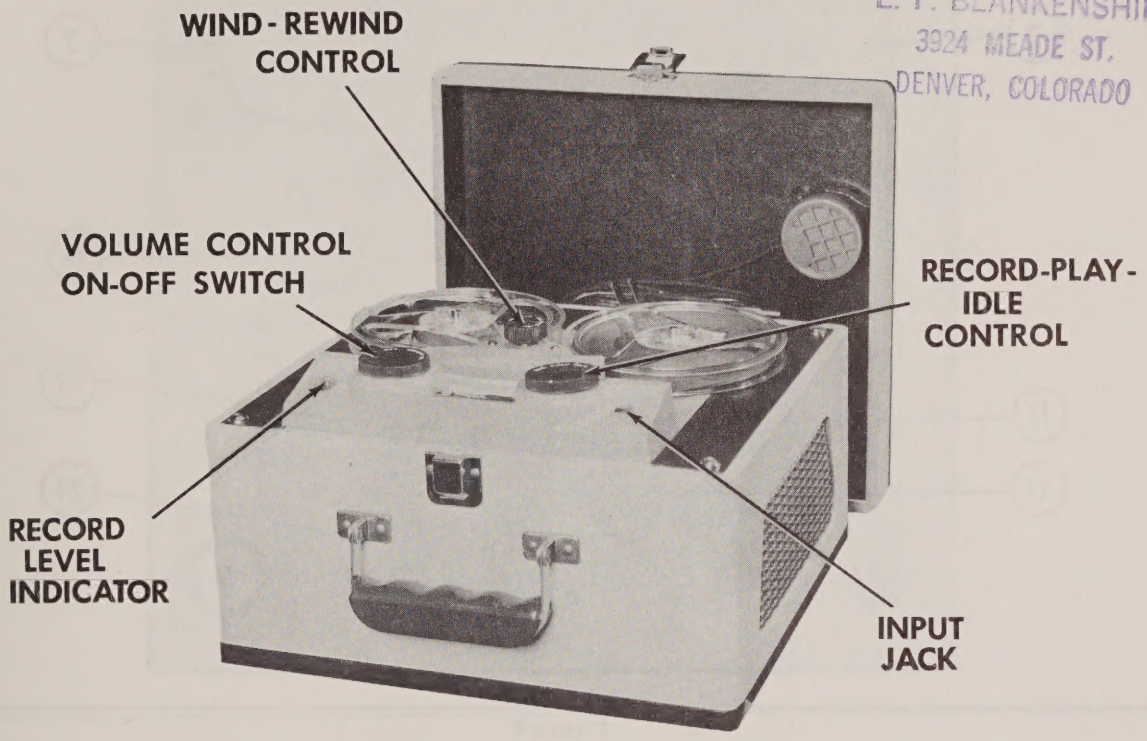

AIRCASTLE
MODEL 795.880

Figure 1

GENERAL INFORMATION

The Aircastle Model 795. 880 Tape Recorder is designed to record and play back two tracks of material on standard width recording tape, which doubles the playing time of a 3" or 5" reel with no loss of frequency response or quality. Recordings can be made from a radio, television receiver or phonograph, in addition to those made directly from the microphone. A high speed wind and rewind lever is located in the center of the upper plate. The Aircastle is supplied com - plete with microphone and 6 foot cord, one empty and one full reel of Type "A" tape, 6 foot power cord, and instruction booklet.

This recorder has a tape speed of 3 3/4" per second. Using both tracks, the total recording time for a 5" reel of tape is one hour.

The Aircastle is designed to operate on 60 cycle, 105-125 volts, AC supply only.

Supplied by:

Spiegel
1061 W. 35th Street
Chicago 9, Illinois

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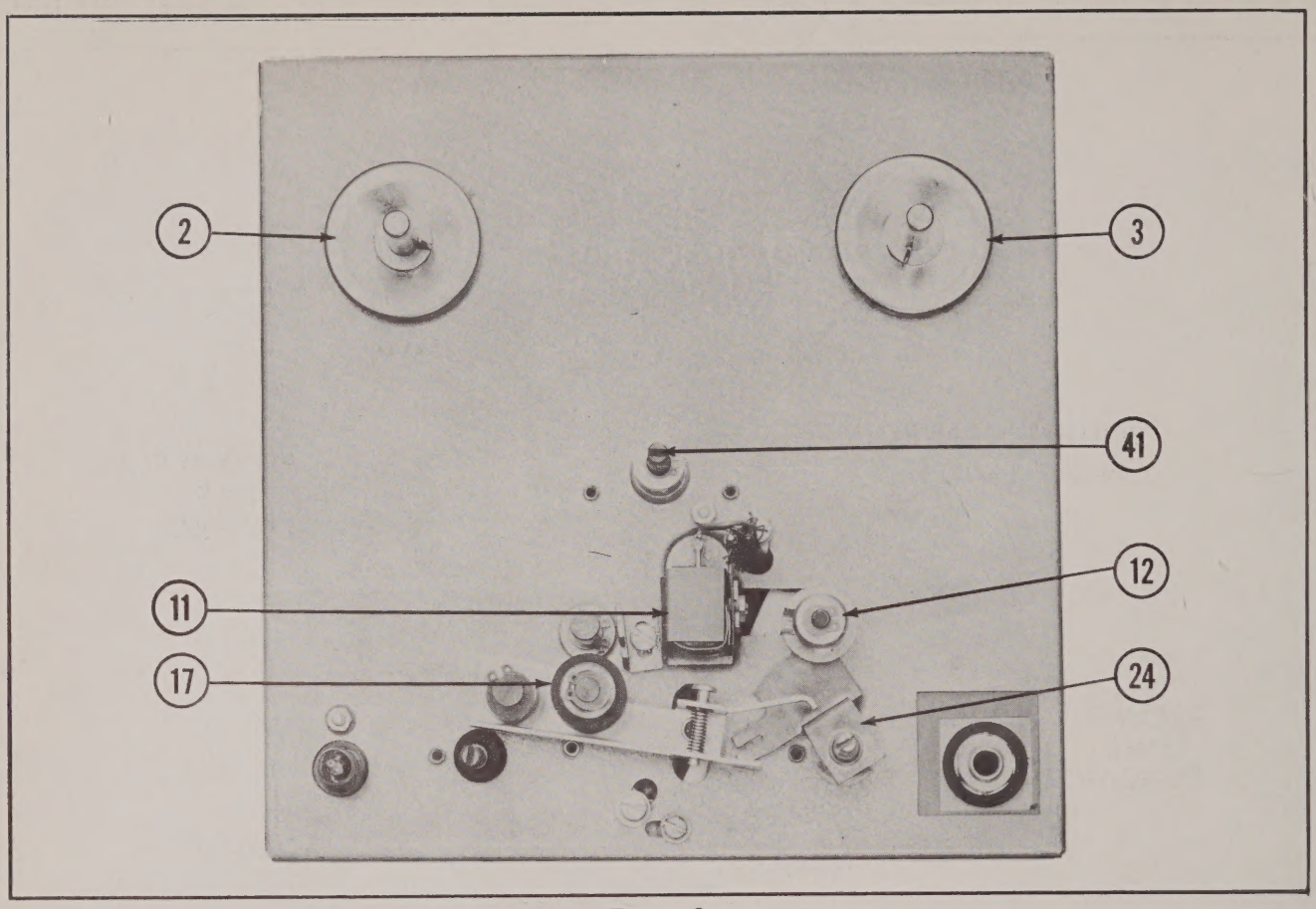

Figure 2

SPECIFICATIONS

Size-Portable Unit-
7" x 10" x 11 1/2".

Weight-
Approximately 14 lbs.

Case-
Airplane cloth luggage carrying case, two-tone.

Tape Speed-
3 3/4" per second.

Tracks-
Dual.

Reel Size-
5" maximum.

Tape Wind-
Type "A".

Track Selection-
Manual turnover.

Recording Time-
1 hour at 3 3/4" per second (1/2 hour each track).

Head Alignment Provision-
Yes.

Inputs-
Microphone, radio, television, and phonograph-panel jack.

Record Volume Indicator-
Neon type.

Tube Complement-
12AT6-Amplifier, 12AX7-AF Amplifier, -Bias Oscillator, 50C5-Audio Output.

OPERATING INSTRUCTIONS

Threading The Tape-

With the "Rec-Play-Idle" control in the "Idle" position, place an empty reel on the left hand (take-up) spindle. Place a full reel of tape on the right hand (supply) spindle so that the tape will lead off in a clockwise direction. Remove approximately twelve inches of tape from the supply reel for ease of threading the machine. Hold a section of tape straight with both hands and insert the tape into the tape slot. Insert the free end of the tape into one of the hub slots on the take-up reel, then wind the reel one or two times clockwise to secure the tape and to take up all slack.

NOTE: Extreme caution should be taken in the threading of the machine to avoid putting a twist in the tape. Also make certain the smooth (or plastic) side of the tape is facing the front of the recorder.

To Record-

Secure the line cord in the slot provided at the back of the case. Plug the line cord into a convenient

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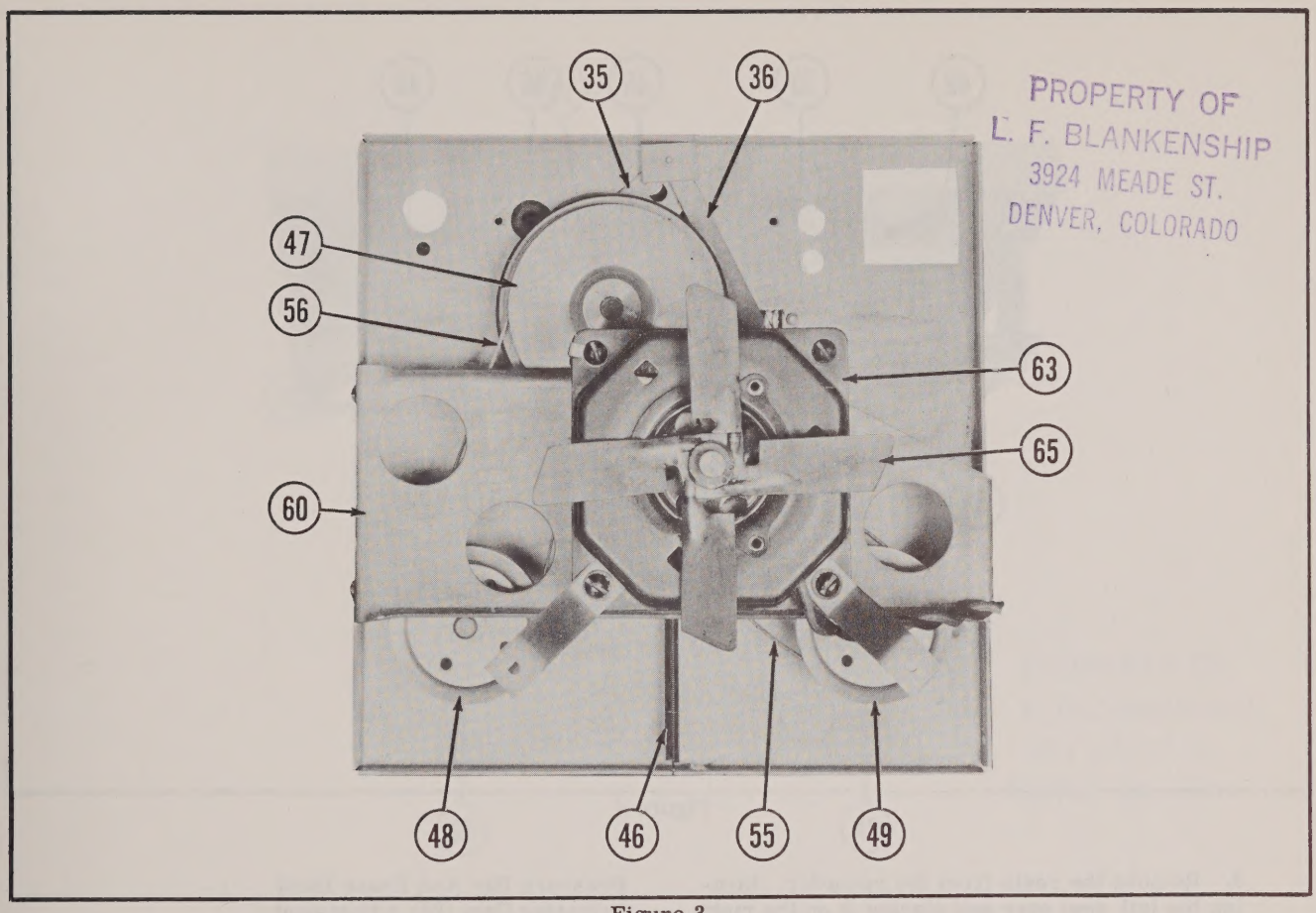


Figure 3

wall receptacle and insert the mircophone plug into the "Input Jack" located on top of the recorder. Turn power on by turning "Off-Volume" control clockwise until a click is heard, and allow approximately one minute for warm-up. Thread tape as described under "Threading The Tape". Turn "Rec-Play-Idle" control to "Rec." position. Adjust "Volume" control until "Recording Level Indicator" flashes on high peaks only. To record from radio, phonograph, or television, follow same procedure as above, keeping volume of appliance at a normal level. To stop movement of tape, turn "Rec-Play-Idle" control to "Idle" position.

To Wind Or Rewind Tape-

Turn power on. Turn "Rec-Play-Idle" control to "Idle" position. Rewind tape by holding "Wind-Rewind" control in clockwise position. Wind tape by holding "Wind-Rewind" control in counter-clockwise position. Releasing this control will automatically stop movement of tape.

To Play Recordings-

Turn power on. Allow approximately one minute for warm-up. Turn "Rec-Play-Idle" control to "Play" position. Adjust "Volume" control for desired listening level. To stop movement of tape, turn "Rec-Play-Idle" control to "Idle" position.

CAUTION: Do not set "Rec-Play-Idle" control to "Record" position when "Play" is desired. In "Record" position previously recorded portion of tape is automatically erased.

To Edit And Splice Tape-

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections etc. Unused sections of tape can be spliced together for re-use.

2. Cut tape at a 60^0 angle with an overlap so ends will line up. (Cutting tape at 60^0 angle will eliminate detection of splice on recording.)

3. Align both ends of tape, glossy side up. Cover aligned ends with splicing tape, evenly and securely, and trim off any excessive width.

Dual Track Recording-

The Aircastle is designed so that only 1/2 the tape width is recording at a time; thereby resulting in two track recording. This two track operation is accomplished in the following manner:

1. After a reel of tape has been recorded; i.e. all the tape wound onto the left reel, turn "Rec-Play-Idle" control to "Idle" position.

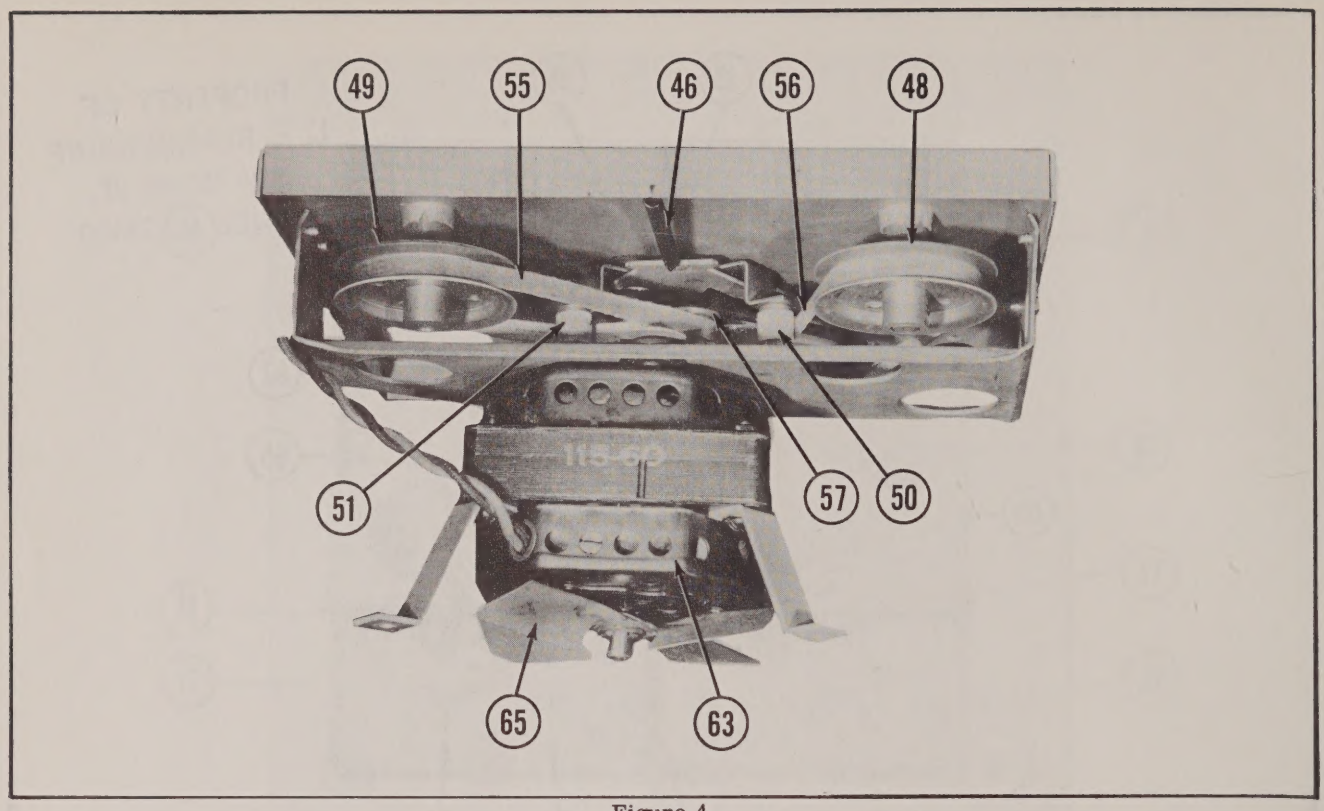


Figure 4

2. Remove the reels from the recorder, turning the full reel over and placing it on the right spindle.

3. Properly thread the tape and proceed with the recording.

4. After the second track has been recorded the first track of recording is ready to be played, without rewinding, by reversing the reels as described in Step #2 above.

ADJUSTMENTS

Play-Record Head Adjustment-

To adjust the play-record head for maximum frequency response, make the following adjustment.

1. Remove rear cover plate (6).

2. Properly thread an alignment tape or a good recorded tape on the machine.

3. Set the controls as described under "To Play Recordings".

Grip the vertical portion of the record head mounting bracket with a pair of long-nosed pliers. Rock the mounting bracket and record head from side to side slightly until the maximum high frequencies are obtained. Bend the bracket with the pliers to obtain a permanent set at this position.

4. Replace the rear cover plate (6).

Pressure Bar And Erase Head Actuating Cam (24) Adjustment-

Cam (24) should be adjusted so that the erase magnet (12) faces the front when the unit is in "Record" position. Adjust by loosening set screw in cam (24) and move the cam until the above condition exists. When properly adjusted in the "Record" position, the "Play-Idle" positions will also be correct.

Take-Up Tension Lever (35) Adjustment-

Lever (35) should be adjusted so that with tape threaded and "Rec-Play-Idle" control in "Idle" position, there is no movement of tape. If adjustment is required, loosen screw (31) and move lever (35) to obtain above results.

Rewind Tension Lever (36) Adjustment-

Lever (36) should be adjusted so that with tape threaded and "Rec-Play-Idle" control in "Idle" position, there is no movement of tape. If adjustment is required, loosen screw (29) and move lever (36) to obtain above results.

TROUBLES

Fails To Erase-

1. Erase head spring (15) loose or broken, resulting in erase head (12) not being pivoted forward to engage tape.

2. Pressure bar and erase head actuating cam (24) not adjusted properly. See "Pressure Bar And Erase Head Actuating Cam (24) Adjustment".

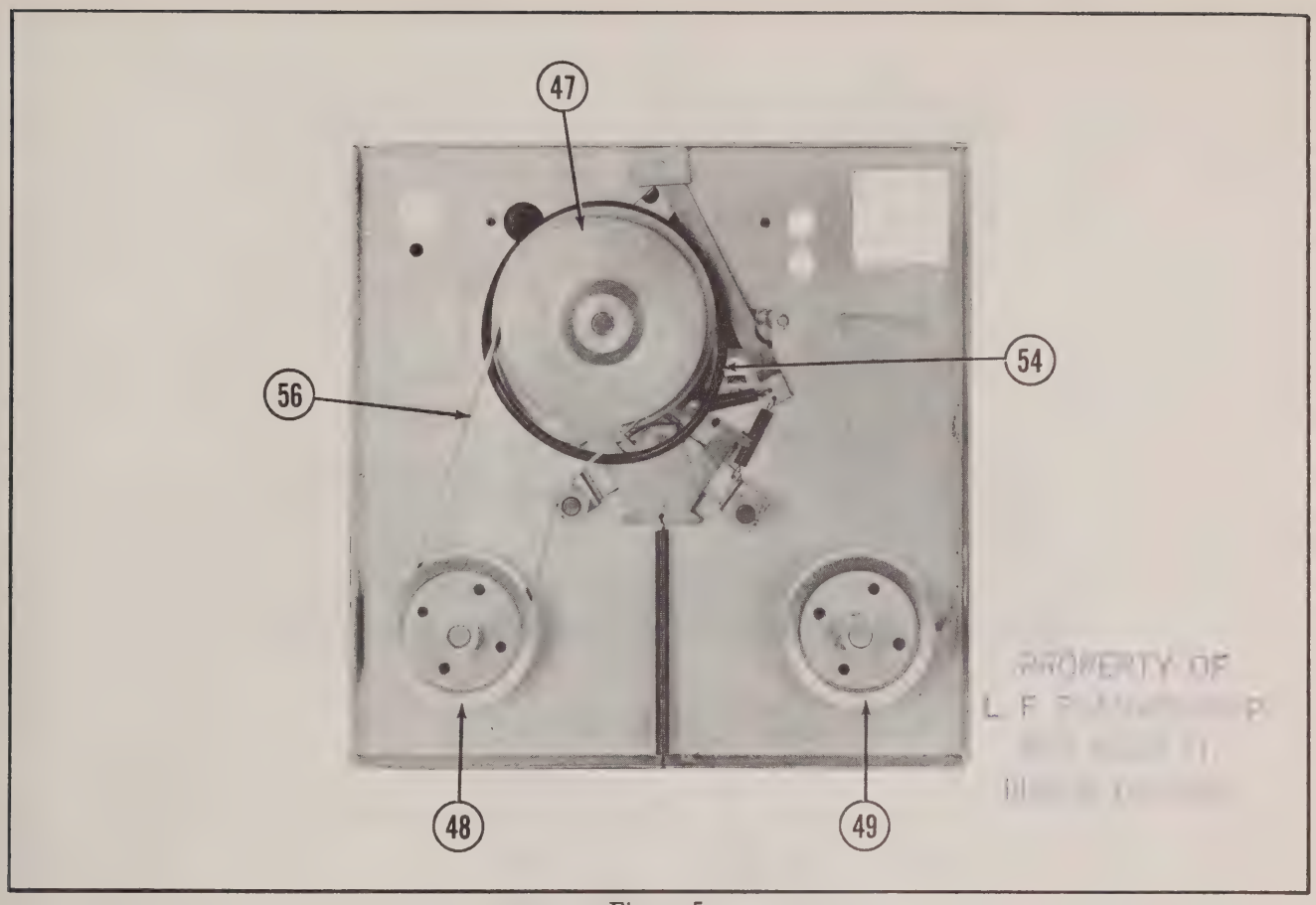


Figure 5

Fails To Record-

1. Tape pressure pad not adjusted properly, resulting in the tape not being held against the recording head. Bend pressure pad spring just enough to hold tape firmly against recording head.

2. Check recording head connections.

3. Check amplifier for faulty components.

No Drive On Record Or Playback-

1. Rubber drive belt (54) loose or broken.

2. Take-up belt (56) loose or broken.

3. Defective motor.

4. Connecting leads fouling motor fan.

5. Flywheel and capstan shaft (47) binding.

Speed Variation Or "Wow"-

1. Check capstan (47), pressure roller (17), and motor pulley for oil or foreign material. Clean with soft cloth and carbon tetrachloride.

2. Check adjustment of tension levers (35) and (36).

No Wind Or Rewind-

1. Drive belt (54) loose or broken.

2. Belts (55) or (56) loose or broken.

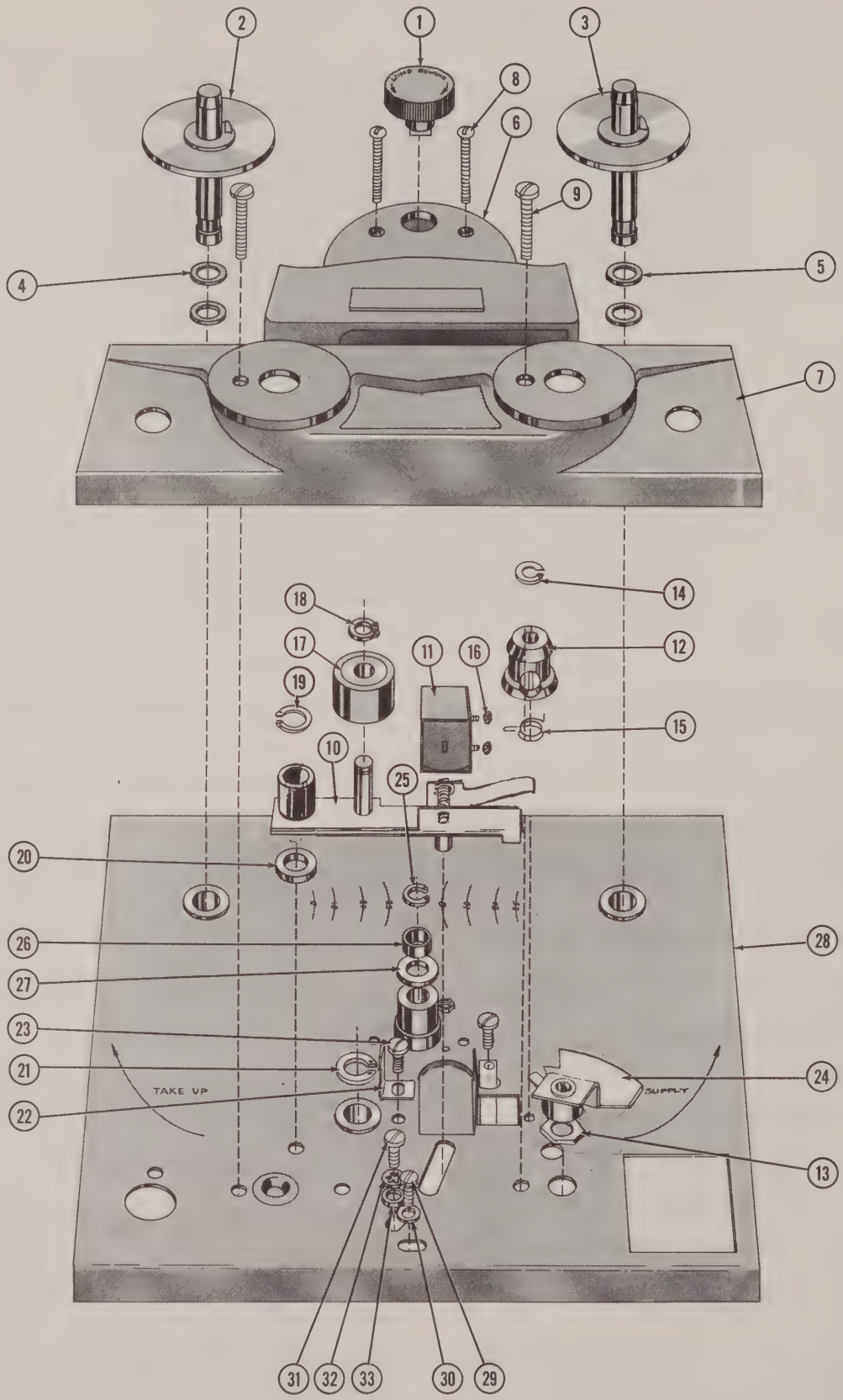
3. Check for oil or grease on driving surfaces. Clean with soft cloth and carbon tetrachloride.

LUBRICATION

All moving parts of this recorder are located in self lubricated oilite bearings, therefore, in normal use, no lubrication is necessary. When unit is disassembled for repair, clean all bearings with a clean soft cloth and apply a thin film of oil on bearing surface.

CLEANING

The pressure roller (17), capstan shaft (47), and play-record head (11) are subject to a coating of tape oxide which is worn off the tape as it passes these parts. This condition will cause poor performance and should be removed occasionally with a soft cloth and carbon tetrachloride.



A PHOTOFACT "EXPLODED" VIEW
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Figure 6A. Exploded View Of Parts Above Baseplate.

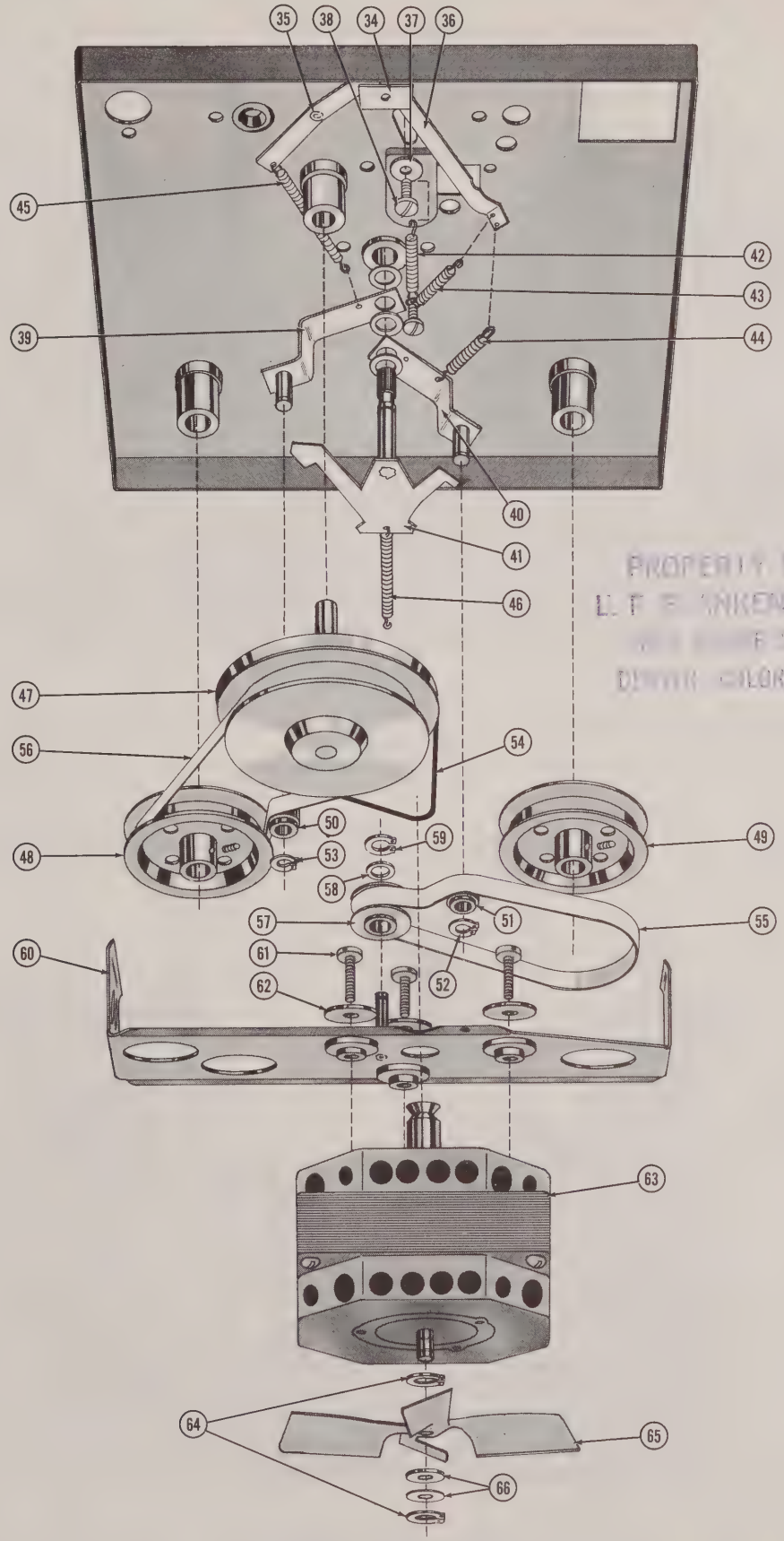

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Figure 6B. Exploded View Of Parts Below Baseplate.

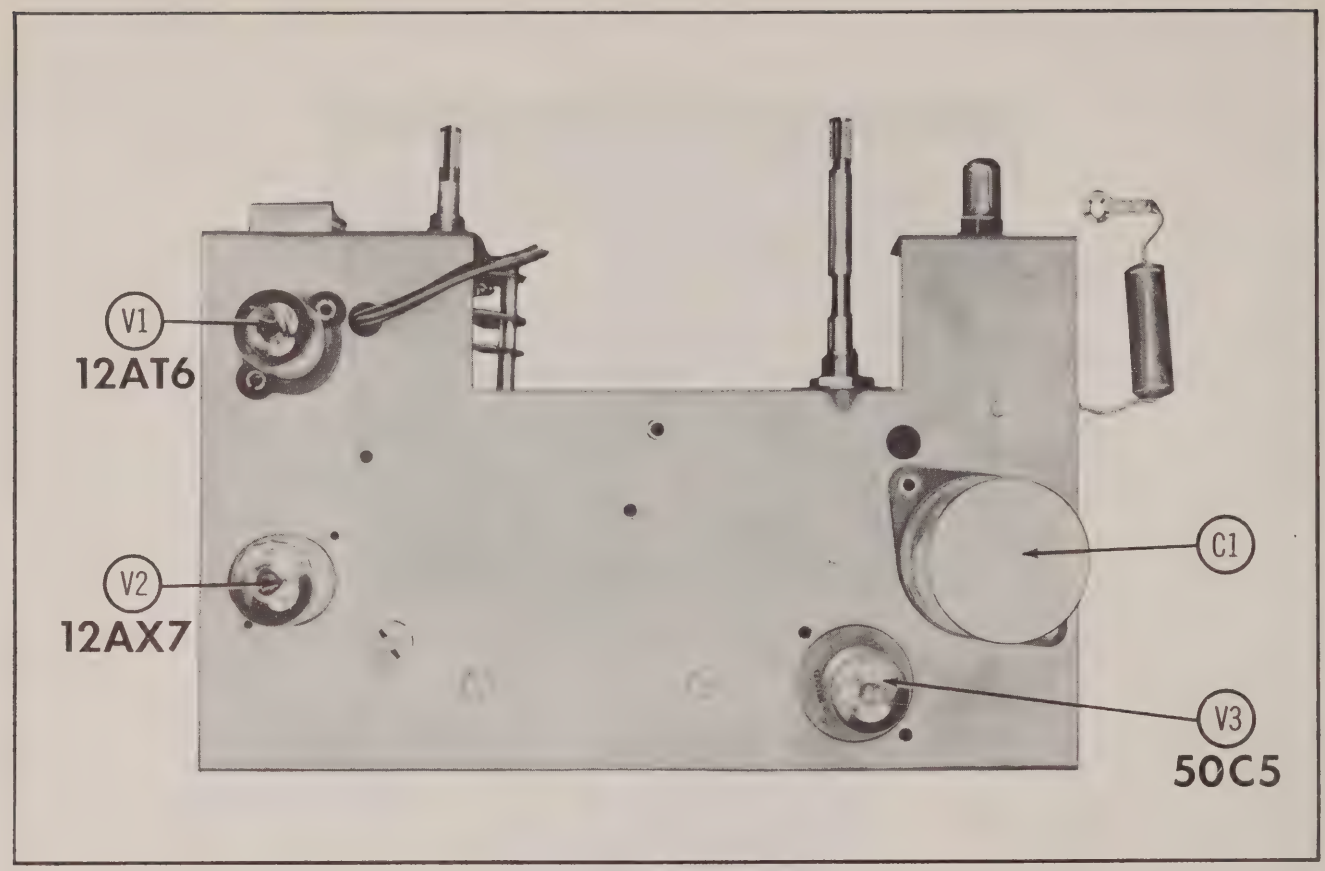


Figure 7

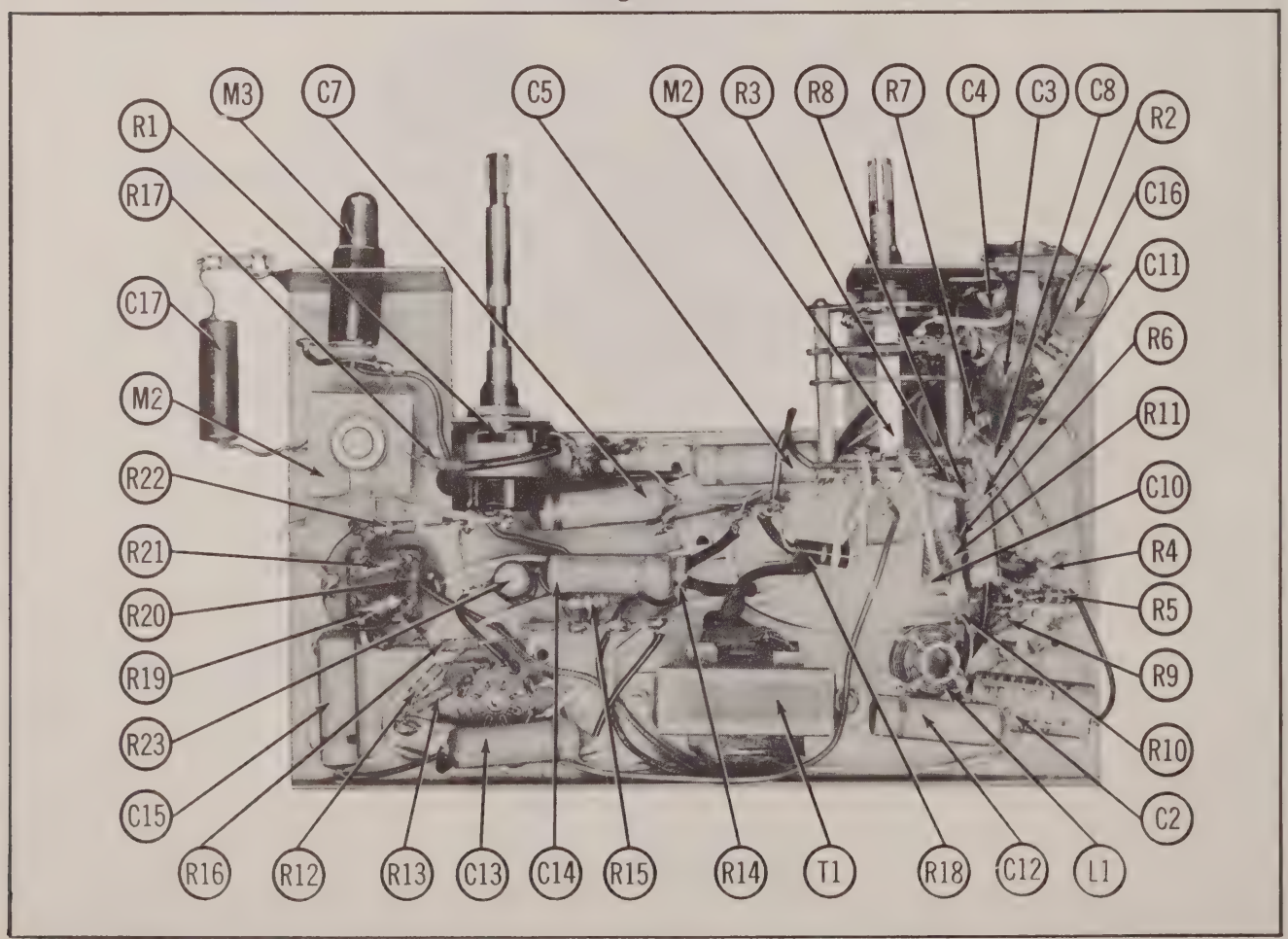
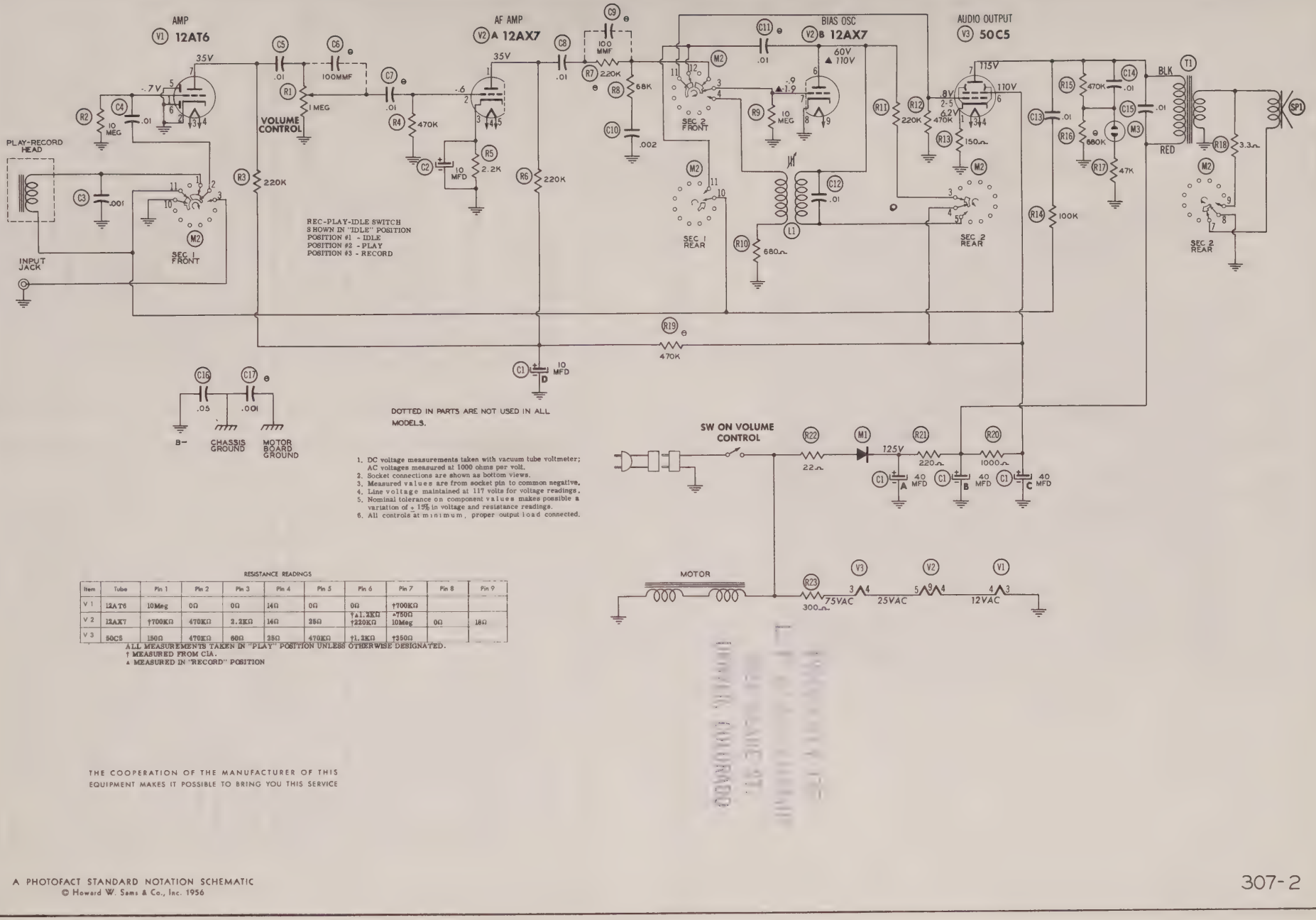


Figure 8



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT6	10Meg	0Ω	0Ω	14Ω	0Ω	0Ω	†700KΩ		
V 2	12AX7	†700KΩ	470KΩ	2.2KΩ	14Ω	25Ω	†▲1.2KΩ †220KΩ	▲750Ω 10Meg	0Ω	18Ω
V 3	50C5	150Ω	470KΩ	60Ω	25Ω	470KΩ	†1.2KΩ	†350Ω		

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM C1A.
▲ MEASURED IN "RECORD" POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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AIRCASTLE
MODEL 795.880

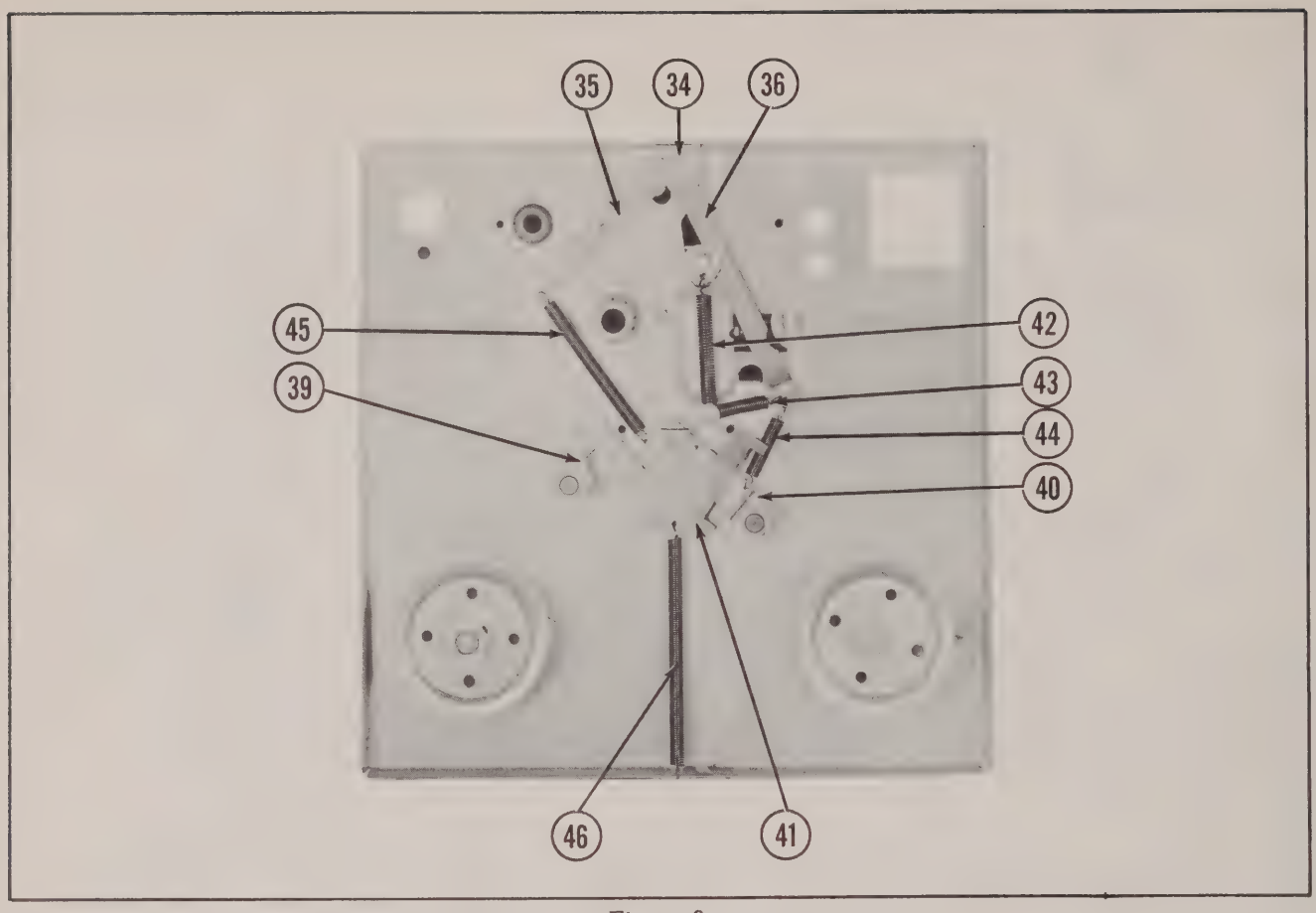

Figure 9

MECHANICAL PARTS LIST

Ref. No.	Description	Ref. No.	Description
1	Wind-Rewind Knob	30	Washer
2	Take-Up Spindle	31	Screw
3	Supply Spindle	32	Internal Lockwasher
4	Take-Up Spindle Washer	33	Washer
5	Supply Spindle Washer	34	Tapped Plate
6	Rear Cover Plate	35	Take-Up Spindle Tension Adj. Lever
7	Front Cover Plate	36	Rewind Tension Adj. Lever
8	Rear Cover Plate Screws	37	Pressure Bar Washer
9	Front Cover Plate Screws	38	Pressure Bar Screw
10	Pressure Bar Assembly	39	Wind Actuating Lever
11	Play-Record Head	40	Rewind Actuating Lever
12	Erase Head & Tape Guide	41	Wind-Rewind Control Shaft & Cam Assembly
13	Pressure Bar & Erase Head Hex Head Nut	42	Pressure Bar Spring
14	Erase Head & Tape Guide Truarc Washer	43	Rewind Tension Lever Return Spring
15	Erase Head & Tape Guide Spring	44	Rewind Actuating Lever Spring
16	Play-Record Head Mounting Nut	45	Wind Actuating Lever Spring
17	Pressure Roller	46	Wind-Rewind Control Shaft & Cam Assembly Spring
18	Pressure Roller Truarc Washer		
19	Pressure Bar Truarc Washer	47	Flywheel & Capstan Shaft Assembly
20	Pressure Bar Spacer	48	Take-Up Reel Pulley
21	Capstan Shaft Truarc Washer	49	Supply Reel Pulley
22	Tape Guide Bracket	50	Wind Actuating Lever Roller
23	Tape Guide Bracket Screw	51	Rewind Actuating Lever Roller
24	Pressure Bar & Erase Head Actuating Cam	52	Rewind Actuating Lever Roller Truarc Washer
25	Wind-Rewind Control Shaft & Cam Truarc	53	Wind Actuating Lever Roller Washer
26	Wind-Rewind Control Shaft & Cam Spacer	54	Rubber Drive Belt
27	Wind-Rewind Control Shaft & Cam Washer	55	Cloth Rewind Belt
28	Main Mounting & Control Plate	56	Cloth Take-Up Belt
29	Screw	57	Rewind Belt Pulley

MECHANICAL PARTS LIST - Con't.

Ref. No.	Description	Ref. No.	Description
58	Washer	62	Motor Mounting Washers
59	Truarc Washer	63	Motor Assembly
60	Motor Mounting Plate	64	Fan Mounting Truarc Washer
61	Motor Mounting Screws	65	Fan
		66	Fan Washer

ELECTRICAL PARTS LIST

Ref. No.	Description	Ref. No.	Description
V1	12AT6, Amplifier	R4	470KΩ, 1/2 Watt
V2	12AX7, AF Amp.-Bias Oscillator	R5	2.2KΩ, 1/2 Watt
V3	50C5, Audio Output	R6	220KΩ, 1/2 Watt
C1A	Elect. Cap., 40mfd. @150V.	R7	220KΩ, 1/2 Watt (Some Models Use A 470KΩ Resistor In This Application.)
C1B	Elect. Cap., 40mfd. @150V.		
C1C	Elect. Cap., 40mfd. @150V.	R8	68KΩ, 1/2 Watt
C1D	Elect. Cap., 10mfd. @150V.	R9	10Meg., 1/2 Watt
C2	Elect. Cap., 10mfd. @10V.	R10	680Ω, 1/2 Watt
C3	.001mfd. @600V.	R11	220KΩ, 1/2 Watt
C4	.01mfd. @200V.	R12	470KΩ, 1/2 Watt
C5	.01mfd. @200V.	R13	150Ω, 1/2 Watt
C6	100mmf. (Not Used In All Models)	R14	100KΩ, 1/2 Watt
C7	.01mfd. @200V. (Some Models Use A .05mfd. Cap. In This Application.)	R15	470KΩ, 1/2 Watt
		R16	680KΩ, 1/2 Watt (Some Models Use A 470KΩ Resistor In This Application.)
C8	.01mfd. @200V.		
C9	100mmf. (Not Used In All Models)	R17	47KΩ, 1/2 Watt
C10	.002mfd. @400V.	R18	3.3Ω, 1 Watt
C11	.01mfd. @200V. (Some Models Use A .002mfd. Cap In This Application.)	R19	470KΩ, 1/2 Watt (Some Models Use A 150KΩ Resistor In This Application.)
C12	.01mfd. @200V.	R20	1000Ω, 1/2 Watt
C13	.01mfd. @200V.	R21	220Ω, 1/2 Watt
C14	.01mfd. @200V.	R22	22Ω, 1/2 Watt
C15	.01mfd. @200V.	R23	300Ω, 10 Watt, W.W.
C16	.05mfd. @400V.	T1	Output Transformer
C17	.001mfd. @600V. (Some Models Use A .002mfd. Cap. In This Application.)	SP1	Speaker
		L1	Bias Oscillator Coil
R1	Volume Control And Switch, 1 Meg.	M1	Selenium Rectifier, 75ma
R2	10 Meg., 1/2 Watt	M2	Record-Play-Idle Switch
R3	220KΩ, 1/2 Watt	M3	Record Level Indicator, Type #NE51

PROPERTY OF
L. F. BLANKENSHIP
3324 MEADE ST
DENVER, COLORADO

AIRLINE MODELS
WG-3602A, WG-2603A

PROPERTY OF
L. F. ...

AIRLINE MODELS
WG-3602A, WG-2603A

TRADE NAME	Airline Models WG-2602A, WG-2603A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated AM-Phono Combination Superheterodyne Receiver
TUBES (Eight)	Types: 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AV6 Det.-AVC-AF Amp., 12AX7 AF Amp.-Phase Inv., (2) 6AQ5 Output, 5Y3GT Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles — RATING .56 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	A5	"
3.	"	High side to pin 1 (grid) of 6BA6 (V1). Low side to chassis.	1400KC	Tune to 1400KC signal	"	A6	"
4.		Loop	"	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

AIRLINE
Model WG-2602A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det.-AVC-AF Amp.	6AV6	6AV6	7BT	
V5	AF Amplifier-Phase Inverter	12AX7	12AX7	9A	
V6	Audio Output	6AQ5	6AQ5	7BZ	
V7	Audio Output	6AQ5	6AQ5	7BZ	
V8	Rectifier	5Y3GT	5Y3GT	5T	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	350	45X415	AFH3-43	CO34	FP376.8	TM-404010-450	T-165	TVL-3785
B	■40	350							
C	▲10	350							
C2	5	10	(Note 1)			TC22 * TC22	TD-5-10NP	MTD-0210 †	

Note 1. Item C2 is a non-polarized unit.
* Connect negative leads together.
† Use positive leads only.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

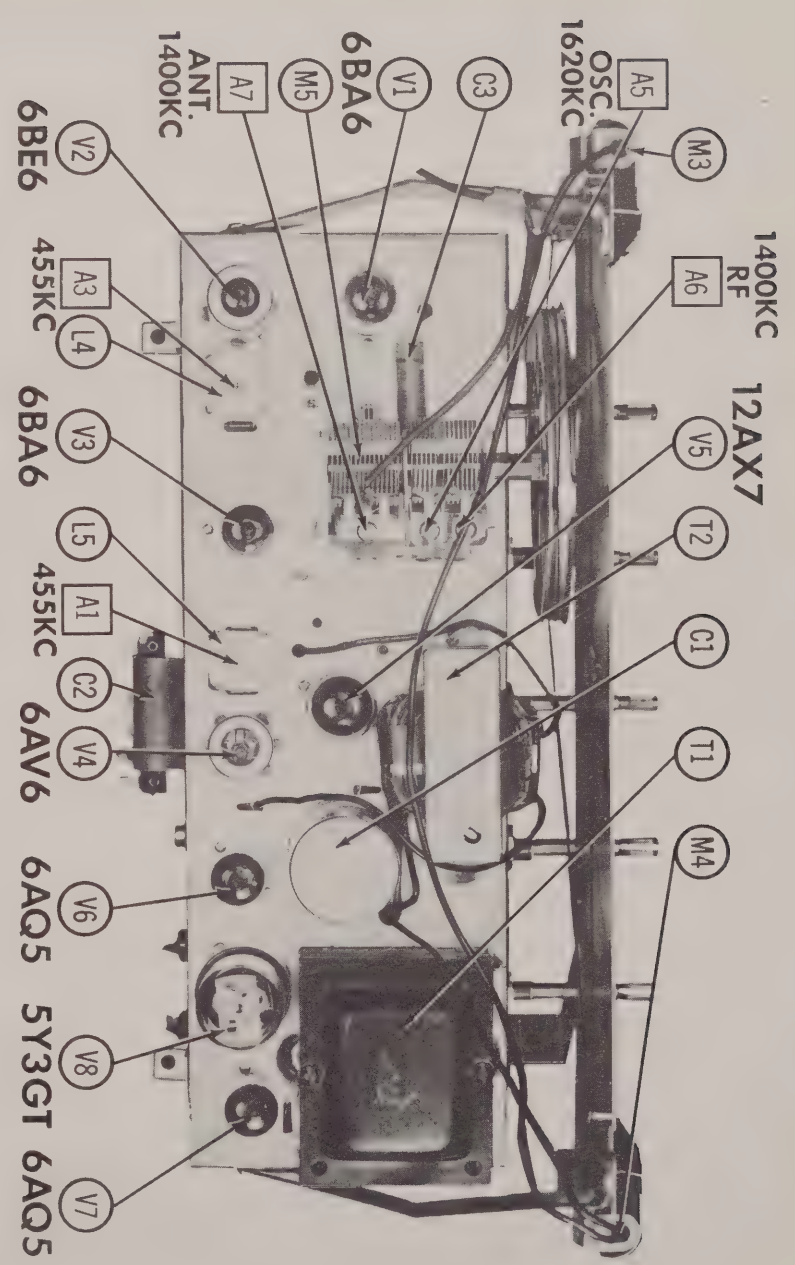
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.01	200		BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C4	.047	200	RCP10W4473M	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C5	.022	400	RCP10W4223M	BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C6	470		47X622	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C7	33		47X612	N750-SI33	TCN-33	TN10	N750K-330		5TCU-Q33	
C8	.047	400	RCP10W4473M	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C9	.047	400	RCP10W2473M	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C10A	50		♦76X1	♦PA-99	♦PC-52	♦111TM3	♦1403-03	UC-545	♦D-3	
B	50							UC-545		
C11	470		47X622	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C12	22		47X627	SI22	D6-220	TP22	GP1K-220	UC-5422	5GA-Q22	
C13	.047	200	RCP10W2473M	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C14	.0047	600	RCP10W2472M	SI4700	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C15	180	500		NP0-SI180	TCZ-180	5R5T18	NP0-334-181		MS-318	
C16	.022	400	RCP10W4223M	BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C17	330		47X624	SI330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C18	.0047	600	RCP10W2472M	SI4700	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C19	.0047	600	RCP10W2472M	SI4700	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C20	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C21	.022	400	RCP10W4223M	BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C22	.022	400	RCP10W4223M	BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C23	.0022	1000	RCP10M10222M	HVD-15-2200	DD-202	CUB16D22	IR5KV-222	PT16222	10TM-D22	
C24	.0022	1000	RCP10M10222M	HVD-15-2200	DD-202	CUB16D22	IR5KV-222	PT16222	10TM-D22	

♦ Items C10A, C10B and R15 are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	40X403	AB-70	A47-1Meg-Z	Q13-137	U-53	Bass
B	Shaft		Not Req.	AK-4	KSS-3	Note Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	40X404	AB-60	A47-500K-Z	Q13-133	U-48	Treble
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R2A
R3A	2Meg	½	36X392	ABT-79	A47F6-2Meg	Q13-139X	UT-449	Loudness tap @ 500KΩ
B	Shaft		Not Req.	AK-4	KSS-4	Not Req.	Not Req.	Attach to R3A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R4	3.3Meg	½		BTS-3.3Meg	
R5	47KΩ	½		BTS-47K	
R6	330KΩ	½		BTS-330K	
R7	100KΩ	½		BTS-100K	
R8	100Ω	½		BTS-100	
R9	47Ω	½		BTS-47	
R10	39KΩ	½		BTS-39K	
R11	33KΩ	1		BTA-33K	
R12	2.2Meg	½		BTS-2.2Meg	
R13	33KΩ	1		BTA-33K	
R14	330Ω	½		BTS-330	
R15	47KΩ	½	♦76X1	BTS-47K	
R16	100KΩ	½		BTS-100K	
R17	68KΩ	½	B84683	BTS-68K	
R18	10Meg	½		BTS-10Meg	
R19	270KΩ	½		BTS-270K	
R20	2.2Meg	½		BTS-2.2Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R21	470KΩ	½		BTS-470K	
R22	33KΩ	½		BTS-33K	
R23	180KΩ	½		BTS-180K	
R24	100KΩ	½		BTS-100K	
R25	2200Ω	½		BTS-2200	
R26	470Ω	½		BTS-470	
R27	120KΩ	½		BTS-120K	
R28	100KΩ	½		BTS-100K	
R29	120KΩ	½		BTS-120K	
R30	470Ω	½		BTS-470	
R31	220KΩ 5%	½		BTS-220K 5%	
R32	7500Ω 5%	½	B83752	BTS-7500 5%	
R33	220KΩ	½		BTS-220K	
R34	220Ω	2			
R35	1000Ω	1		BTA-1000	
R36	6800Ω	½		BTS-6800	

♦ Items C10A, C10B, R15 are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC Ⓐ.56A	506VCT .078ADC	5VAC Ⓐ 2A	6.3VAC Ⓐ2.74A	53X353	P9205①②	P-3051 ①	PM8403 ①②		R-8B①②

① Drill new mounting holes.
② Tape 6.3V center tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6.3KΩ CT	7Ω	51X171A	Z1013	A-2905	A-3880	22S58①	S-57Z ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5"	PM	15Ω	J-12A530-O	5A15T	
SP2	15"	PM	7Ω	J-12A529-A	15A10WF	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Ant.	1.2Ω		9A2376				
L2	RF Coil	10.2Ω		9A2289				Tap Ⓐ6.2Ω
L3	Osc. Coil	.6Ω	6Ω	9A2113	14-1060	BC-387	71-OSC	
L4	Input IF	13Ω	15Ω	9A2112	16-6758	BC-352	12-C1	
L5	Output IF	14Ω	15Ω	9A2063	16-6758	BC-353	12-C2	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA AIRLINE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1	60-41	55-T	GD-J	47	0-1 or S-1 & 0-3	

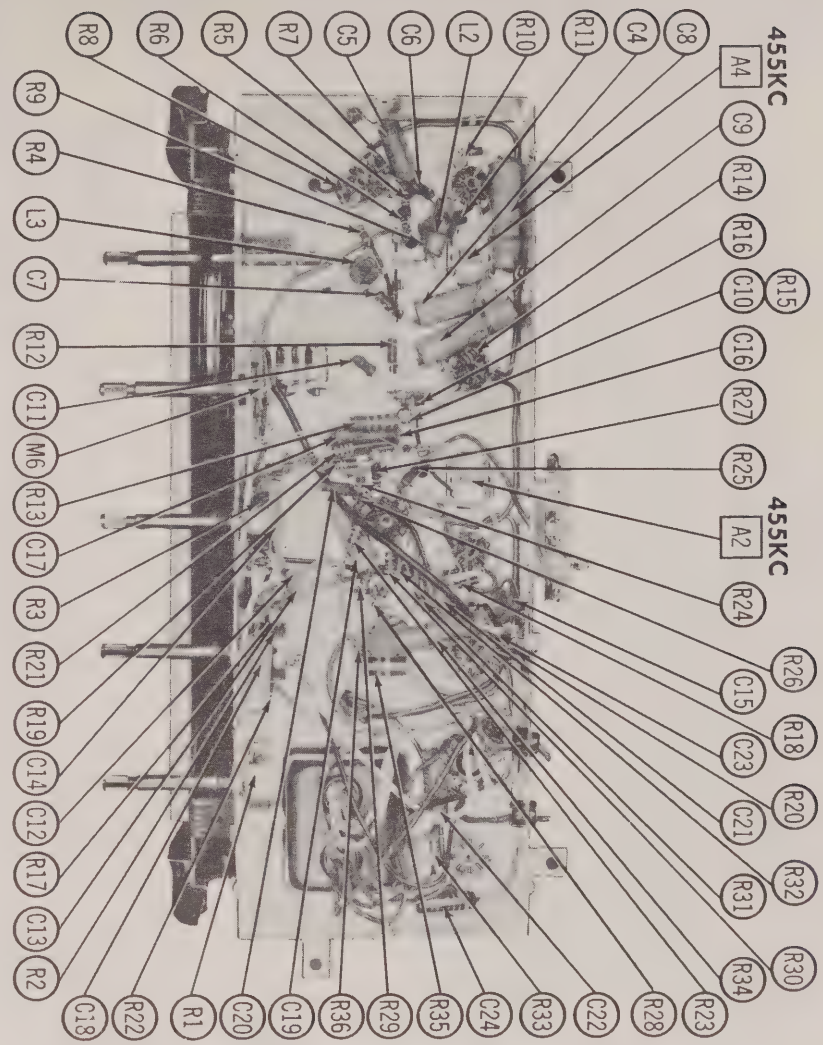
ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA AIRLINE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2	61-42	*S-67 or †S-66 or †♦S-66SD or ♦S-66D	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D	†W-75TPS or ♦†W-75DS or ♦W-75TPD	* Metal † Jewel ♦ Diamond

CHASSIS—BOTTOM VIEW

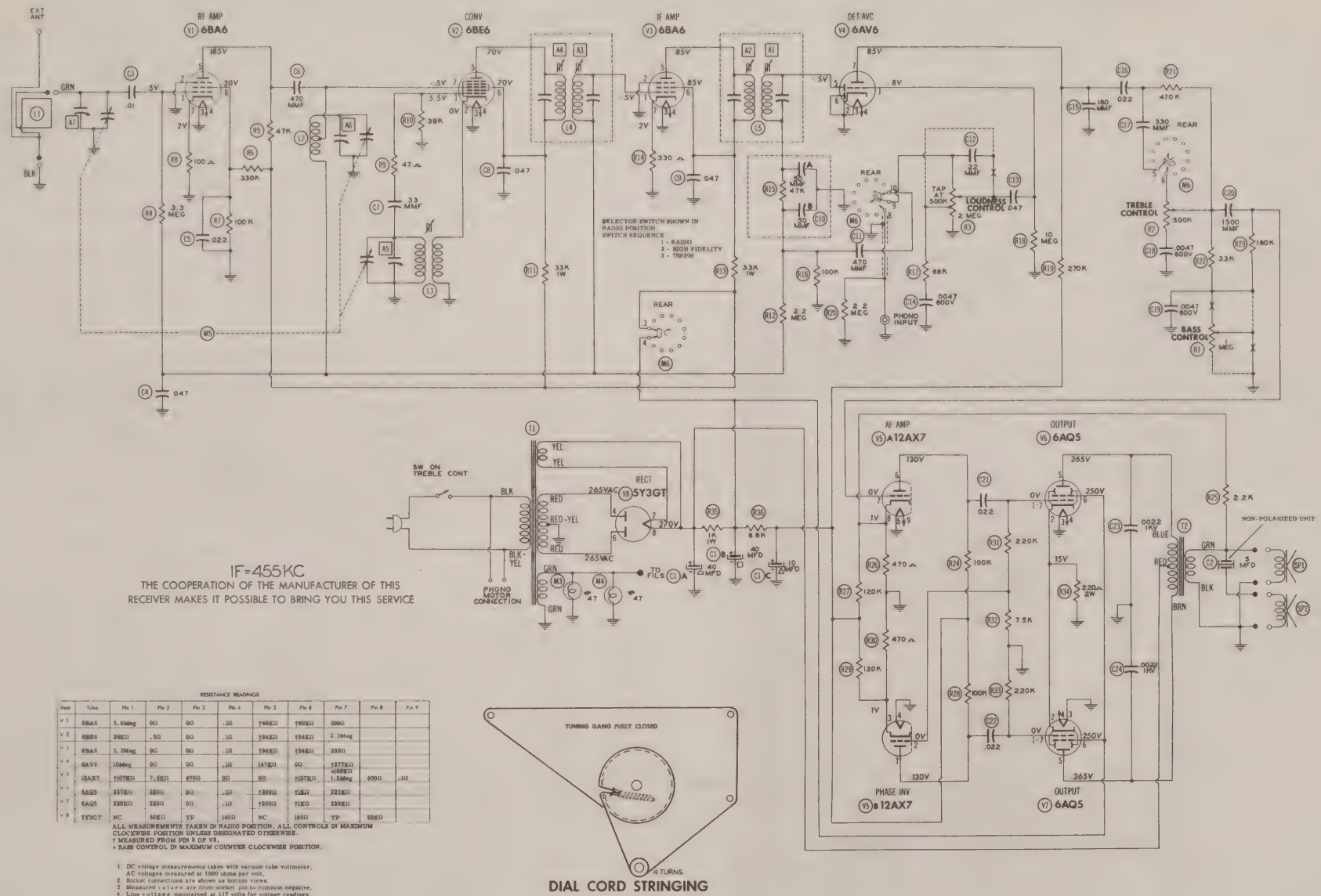


MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Dial Light		#47
M4	Dial Light		#47
M5	Tuning Cap.	14A226	3 Gang (17-495MMF, 13-245MMF, 13-105MMF)
M6	Switch	2A460	Radio-Phono (Rotary-wafer type)
	Knob	10A866-1	Tuning - Mahogany cabinets
	Knob	10A867-1	Radio-Phono switch, on-off-volume, tone - Mahogany cabinets
	Knob	10A866-2	Tuning - Oak cabinets
	Knob	10A867-2	Radio-Phono switch, on-off-volume, tone - Oak cabinets
	Dial Glass	58X781	
	Dial Pointer	15X278-2	

PROPERTY OF
L. F. ARONSHIP
3884 MOORE ST.
DENVER, COLORADO

AIRLINE
Model WG-2602A



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	5.6Meg	0Ω	0Ω	.1Ω	†48KΩ	†90KΩ	100Ω		
V 2	6BE6	39KΩ	.5Ω	0Ω	.1Ω	†34KΩ	†34KΩ	2. 3Meg		
V 3	6BA6	2. 3Meg	0Ω	0Ω	.1Ω	†34KΩ	†34KΩ	330Ω		
V 4	6AV6	10Meg	0Ω	0Ω	.1Ω	147KΩ	0Ω	127KΩ 480KΩ		
V 5	12AX7	†107KΩ	7. 8KΩ	470Ω	0Ω	0Ω	†107KΩ	1. 2Meg	400Ω	.1Ω
V A	6AQ5	227KΩ	220Ω	0Ω	.1Ω	†200Ω	†1KΩ	227KΩ		
V 7	6AQ5	220KΩ	220Ω	0Ω	.1Ω	†200Ω	†1KΩ	220KΩ		
V 8	5Y3GT	NC	50KΩ	TP	140Ω	NC	140Ω	TP	50KΩ	

ALL MEASUREMENTS TAKEN IN RADIO POSITION. ALL CONTROLS IN MAXIMUM CLOCKWISE POSITION UNLESS DESIGNATED OTHERWISE.
† MEASURED FROM PIN 8 OF V8.
+ BASS CONTROL IN MAXIMUM COUNTER CLOCKWISE POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

DIAL CORD STRINGING

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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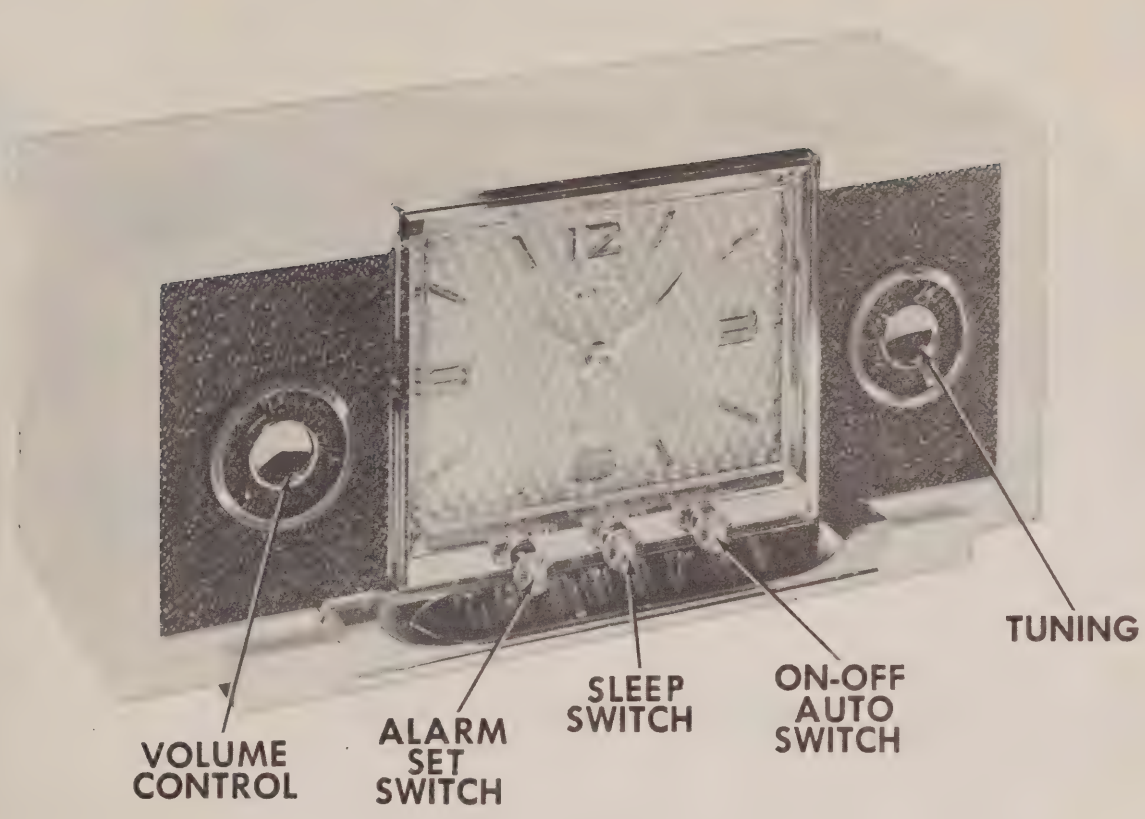
ARVIN
MODEL 958T (Ch. RE397)



ARVIN
MODEL 958T (Ch. RE397)

TRADE NAME	Arvin Model 958T (Chassis RE397)
MANUFACTURER	Arvin Industries Inc., Columbus, Ind.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC- 60~ RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side B-.	455KC (400~ Mod.)	Tuning gang fully open	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1000KC	1000KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

ARVIN
Model 958T (Chassis RE397)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IFAmp.	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rect.	35W4	35W4	5BQ	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	42586	PRS150V30-50	BBRD-5315	TCD497	TDL-5030-150	MTD-301	TVA-2450
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C3	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C4A	220									
B	2000									
C	5000		♦41696	♦PA-113-1	♦PC-150	♦116TM1	♦1408-01		♦DT-1	
D	250									
E										
C5	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C6	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C7	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S1	
C8	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S1	

♦ Items C4A, C4B, C4C, C4D, C4E, R4A, R4B, R4C are combined in one unit. When replacing items separately, C4D and C4E should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	42429	B-60	A47-500K-Z	Q13-133	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½		BTS-22K	
R3	2.2Meg	½		BTS-2.2Meg	
R4A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦41696	BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R5	100KΩ	½		BTS-100K	
R6	120Ω	½		BTS-120	
R7	1200Ω	1		BTA-1200	
R8	47Ω	1	19177		
R9	330KΩ	½		BTS-330K	

♦ Items C4A, C4B, C4C, C4D, C4E, R4A, R4B, R4C are combined in one unit.

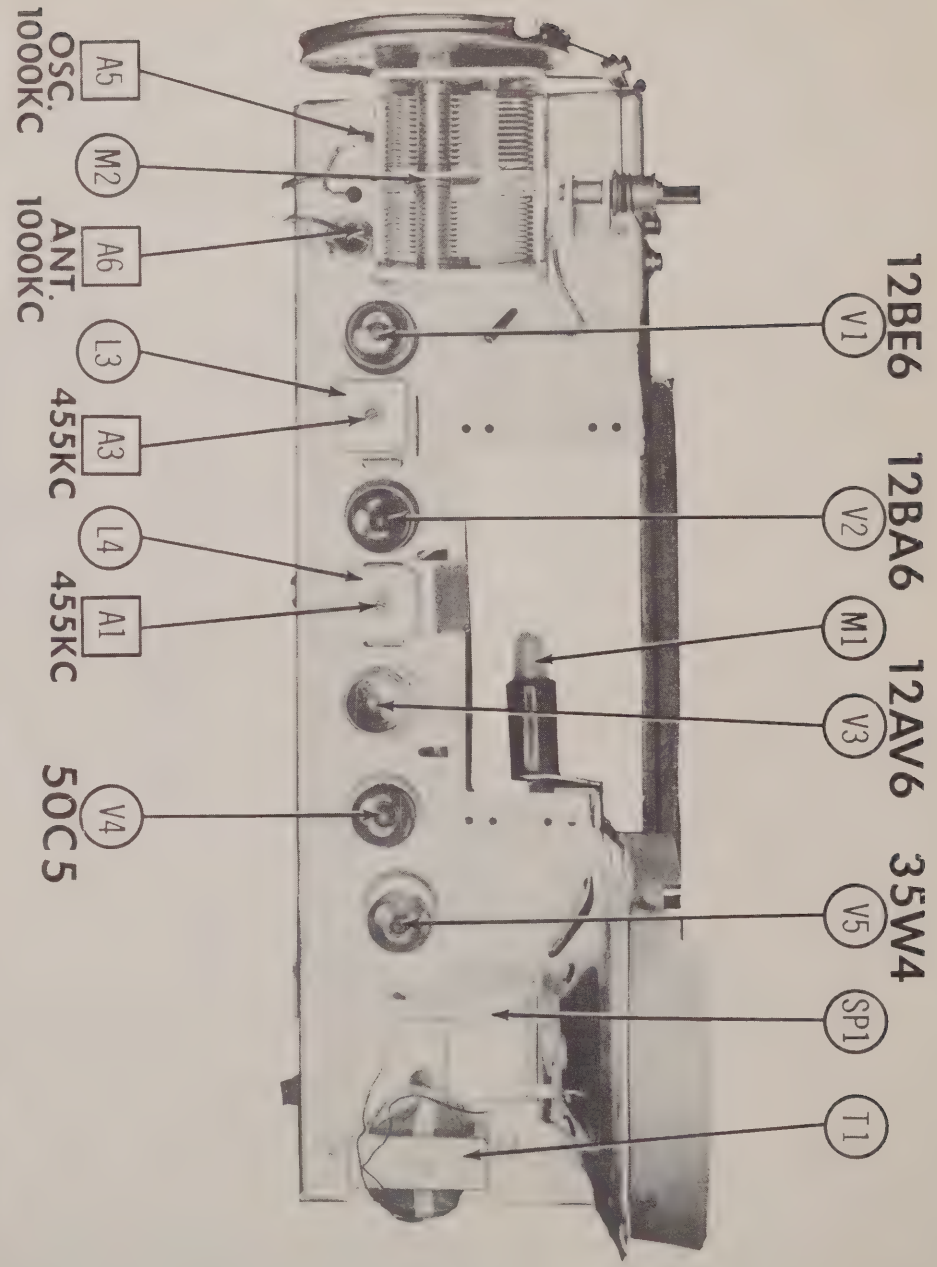
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: ARVIN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2.3KΩ	3.3Ω	42700-1	Z1101	A-3025	A-3332	26S58 ①	S-12X	①Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: ARVIN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.3Ω	C22875	4A07	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

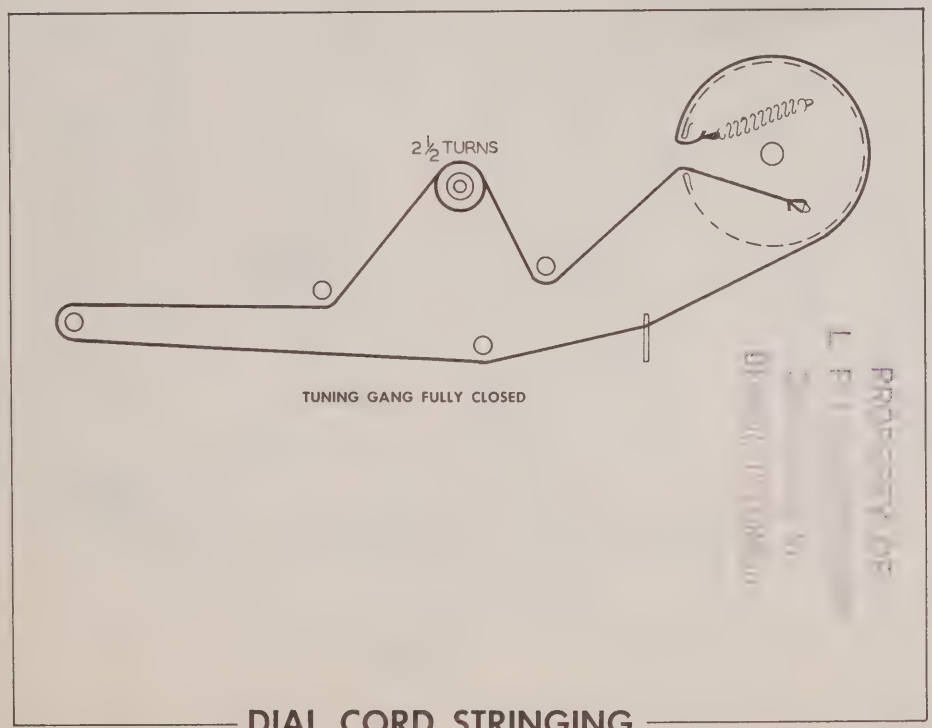
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.5Ω		42680-2				Includes cabinet back
L2	Osc. Coil	.7Ω	6.8Ω	25192-1	14-1073*		69-Osc.	
L3	Input IF	15Ω	15Ω	40845-1	16-6758	BC-352	12-C1	
L4	Output IF	15Ω	15Ω	40845-1	16-6758	BC-353	12-C2	

* Leads sufficient mounting support.

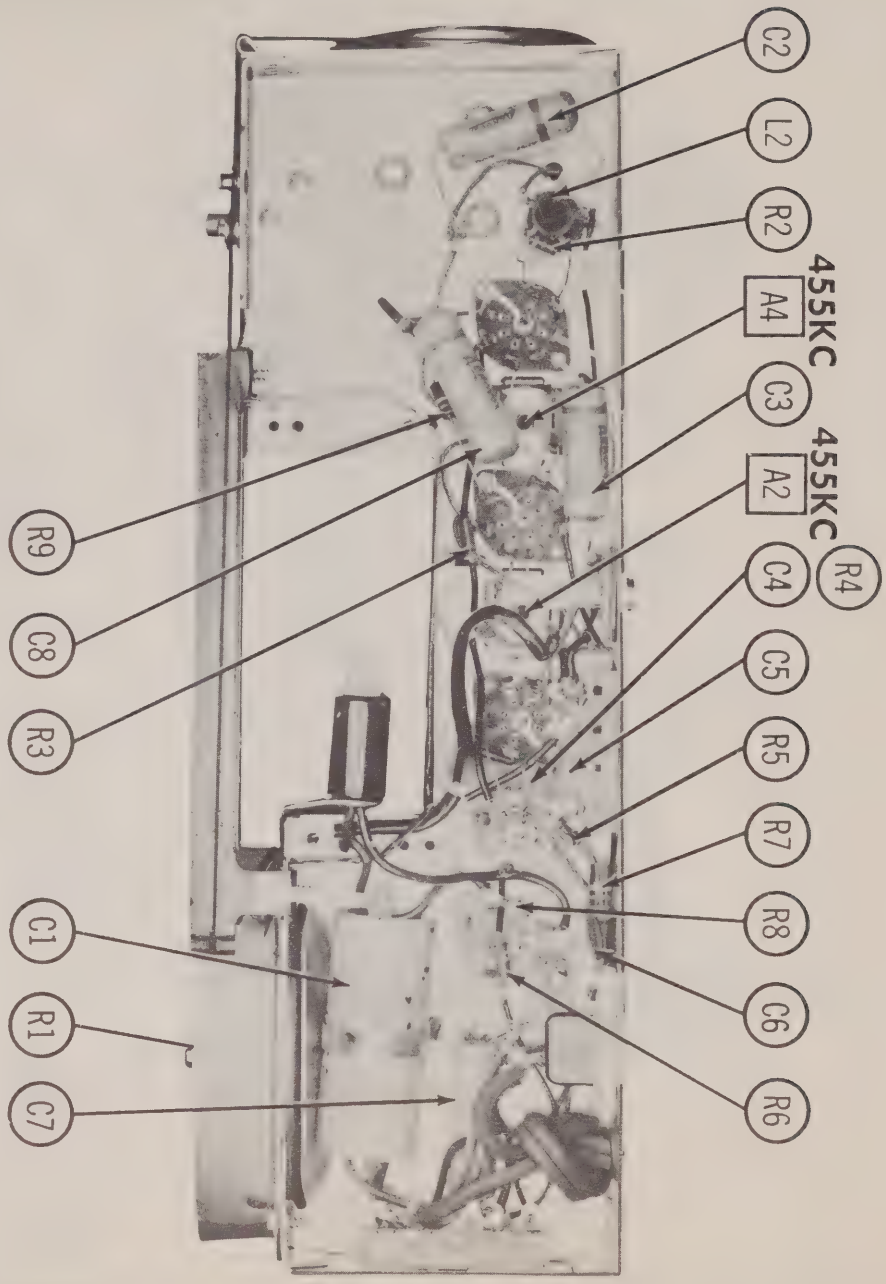
MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Dial Light	23849	#47
M2	Tuning Cap.	42428	2 Gang (35-370MMF, 28-175MMF)
	Cabinet	42681-5	Ivory
	Cabinet	42681-6	Willow Green
	Cabinet	42681-7	Sandalwood
	Cabinet	42681-8	Ebony
	Knob	42413	Volume & Tuning
	Knob	42414	Clock (3 used)
	Pointer	42426	
	Crystal	42411	Clock
	Crystal	42412	Radio Dial

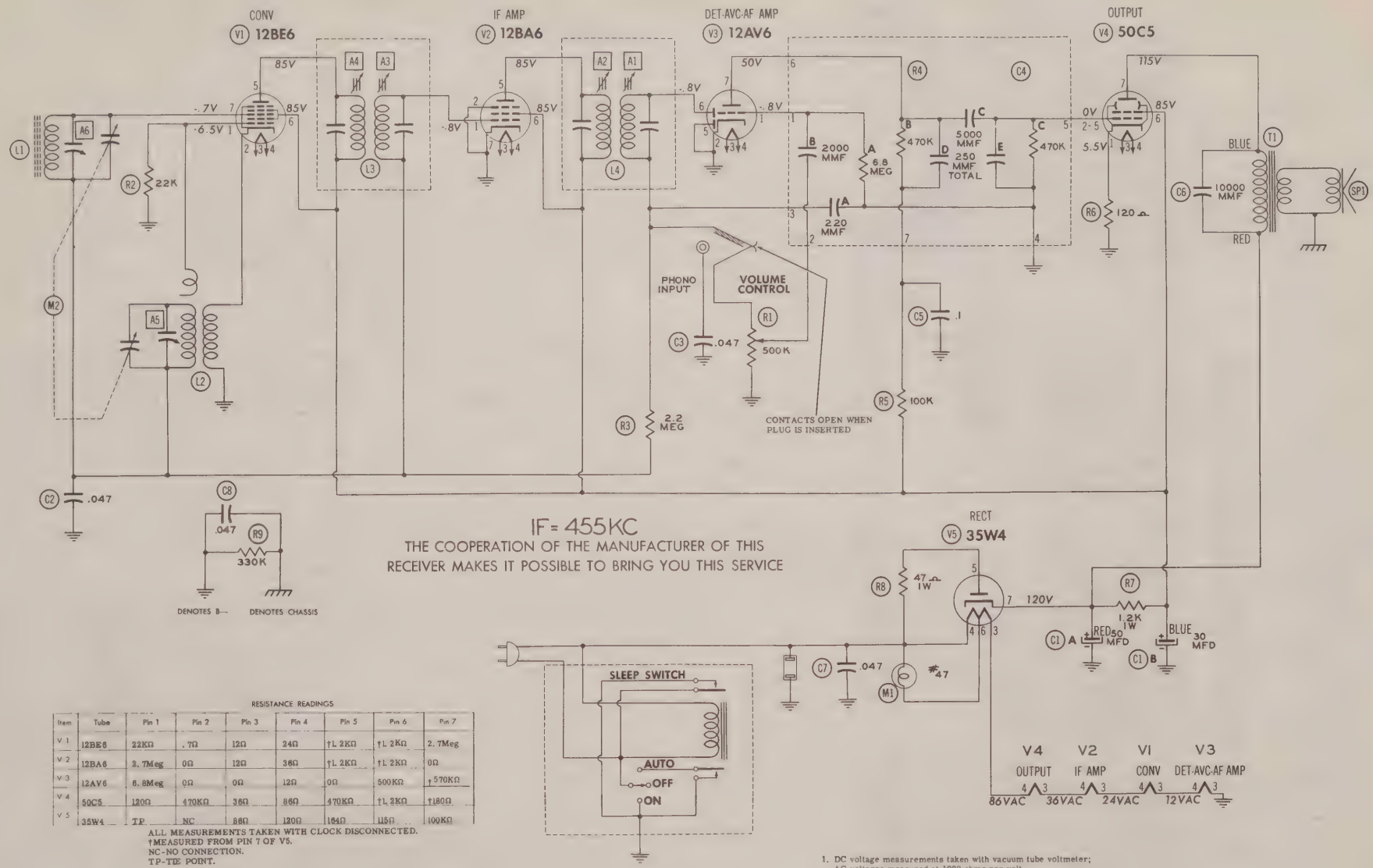


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



ARVIN
Model 958T (Chassis RE397)



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.7Ω	12Ω	24Ω	†1.2KΩ	†1.2KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	12Ω	36Ω	†1.2KΩ	†1.2KΩ	0Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	0Ω	500KΩ	†570KΩ
V 4	50C5	120Ω	470KΩ	36Ω	86Ω	470KΩ	†1.2KΩ	†180Ω
V 5	35W4	TP	NC	88Ω	120Ω	164Ω	115Ω	100KΩ

ALL MEASUREMENTS TAKEN WITH CLOCK DISCONNECTED.
†MEASURED FROM PIN 7 OF V5.
NC-NO CONNECTION.
TP-TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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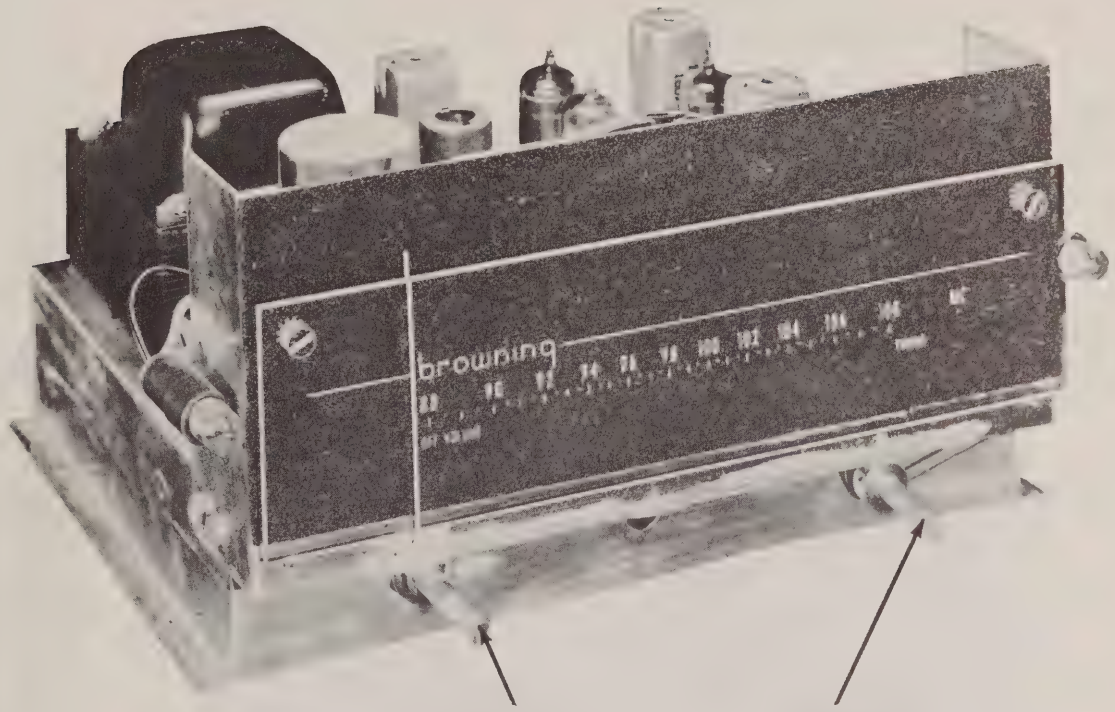
BROWNING
MODEL L-300



BROWNING
MODEL L-300

TRADE NAME	Browning Model L-300
MANUFACTURER	Browning Laboratories, Inc., Winchester, Mass.
TYPE SET	AC Operated FM Superheterodyne Tuner for Custom Installation
TUBES (NINE)	Types: 6BQ7A RF Amp., 6BQ7A Mixer-Osc., 12AT7 AFC, 6AU6 1st. IF Amp., 6AU6 2nd. IF Amp., 6AU6 Limiter, 6AL5 Discriminator, 6AV6 Cathode Follower, 6X4 Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles RATING .52 Amp. @ 117 Volts AC
TUNING RANGE	FM 88MC-108MC

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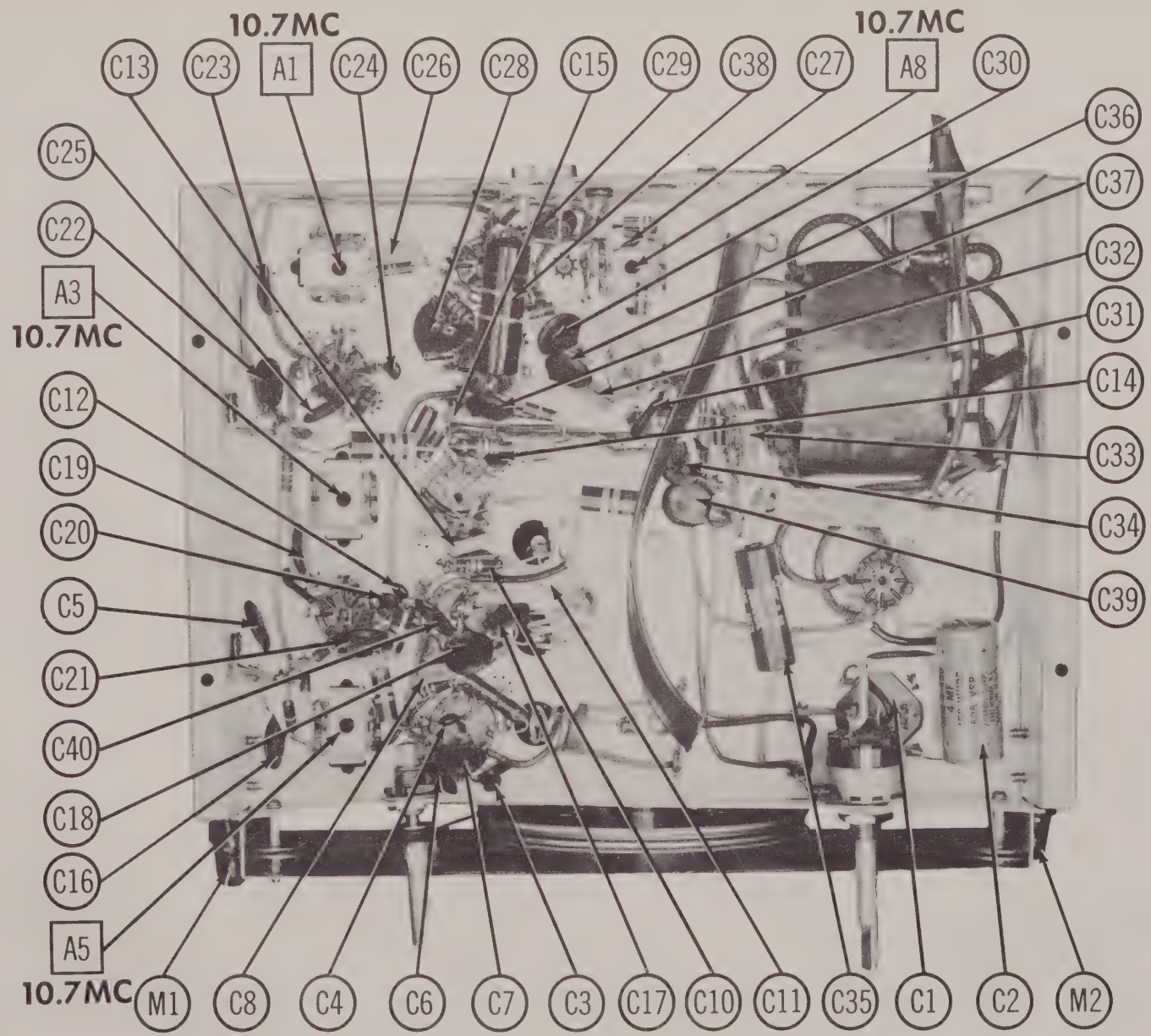
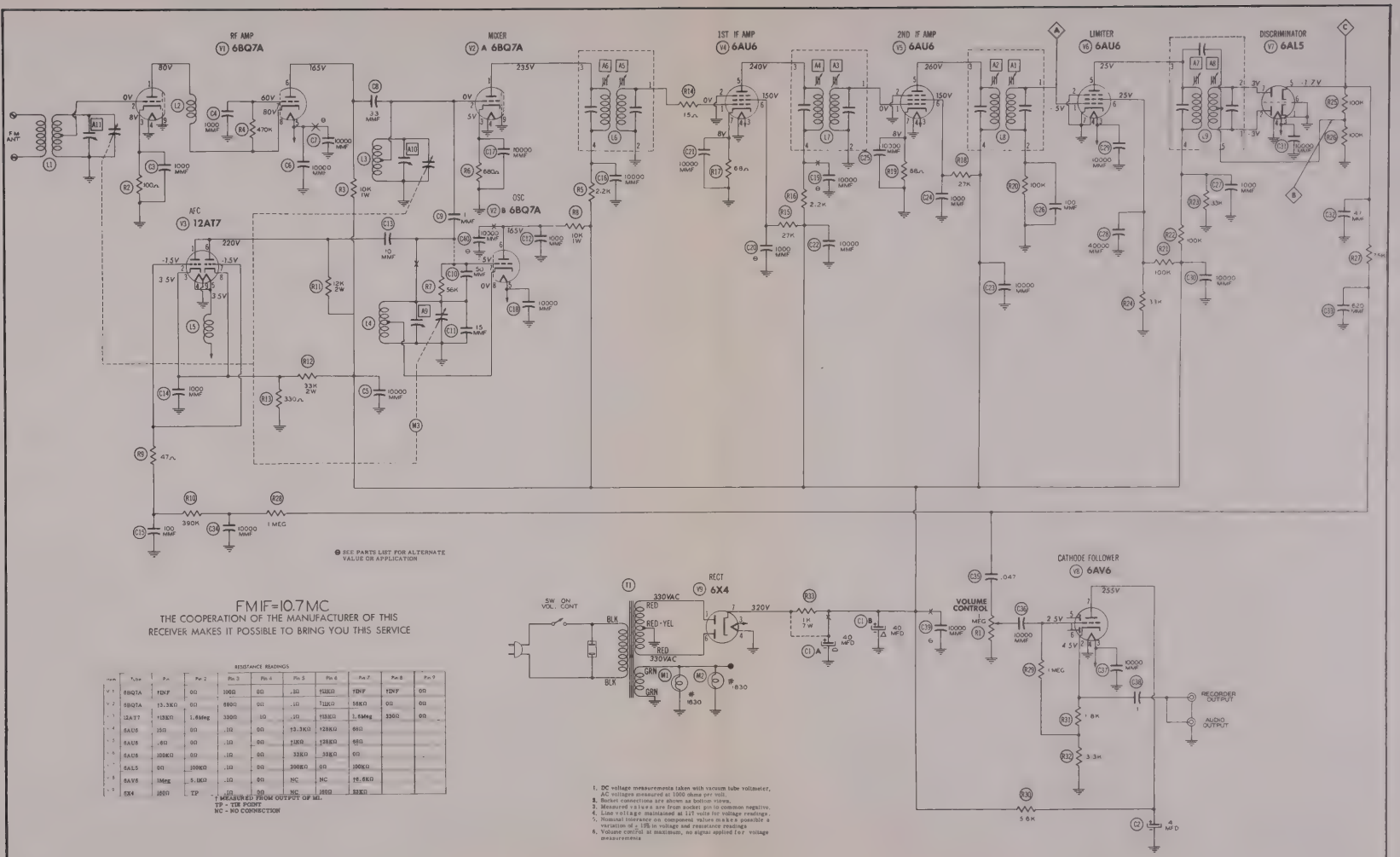


CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



FM IF=10.7MC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V-1	6BQ7A	†INF	0Ω	100Ω	0Ω	.1Ω	†15KΩ	†INF	†INF	0Ω
V-2	6BQ7A	†3.3KΩ	0Ω	680Ω	0Ω	.1Ω	†1KΩ	56KΩ	0Ω	0Ω
V-3	12AT7	†15KΩ	1.6Meg	330Ω	.1Ω	.1Ω	†15KΩ	1.6Meg	330Ω	0Ω
V-4	6AU6	15Ω	0Ω	.1Ω	0Ω	†3.3KΩ	†28KΩ	68Ω		
V-5	6AU6	.6Ω	0Ω	.1Ω	0Ω	†1KΩ	†28KΩ	68Ω		
V-6	6AU6	100KΩ	0Ω	.1Ω	0Ω	33KΩ	33KΩ	0Ω		
V-7	6AL5	0Ω	100KΩ	.1Ω	0Ω	390KΩ	0Ω	100KΩ		
V-8	6AV6	1Meg	5.1KΩ	.1Ω	0Ω	NC	NC	†6.8KΩ		
V-9	6X4	†0Ω	TP	†Ω	0Ω	NC	†0Ω	92KΩ		

† MEASURED FROM OUTPUT OF M1.
TP - TIE POINT
NC - NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements

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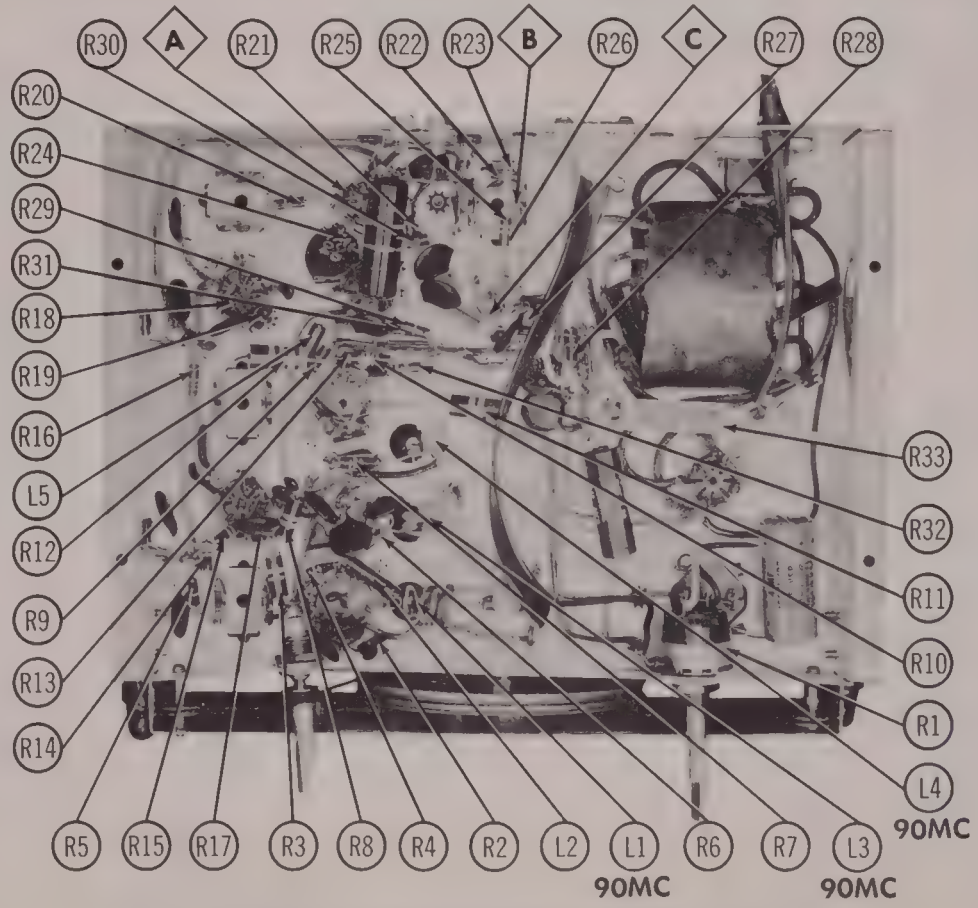


CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION

BROWNING
Model L-300

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 2 (grid) of 6BQ7A (V2). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A7	"
3.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 2 (grid) of 6BQ7A (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A7	"
3.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A8	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	108MC	FM	108MC	DC probe to point Ⓐ. Common to chassis.	A9, A10, A11	Adjust for maximum deflection.
5.	"	"	90MC	"	90MC	"	L4, L3, L1	Expand or compress coil turns for maximum deflection.

FIG. 1

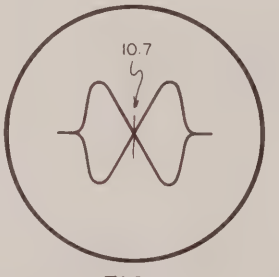


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		BROWNING PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V2	Mixer-Osc.	6BQ7A	6BQ7A	9AJ	
V3	AFC	12AT7	12AT7	9A	
V4	1st. IF Amp.	6AU6	6AU6	7BK	
V5	2nd. IF Amp.	6AU6	6AU6	7BK	
V6	Limiter	6AU6	6AU6	7BK	
V7	Discriminator	6AL5	6AL5	6BT	
V8	Cathode Follower	6AV6	6AV6	7BT	
V9	Rectifier	6X4	6X4	5BS	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BROWNING PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450		AFH2-57	BO45	FP238	TM-D40-450	D-235	TVL-2764
B	▲40	450							
C2	4	450		PRS450V4	BR445	TC70	TD-4-450	FM-4504	TVA-1704

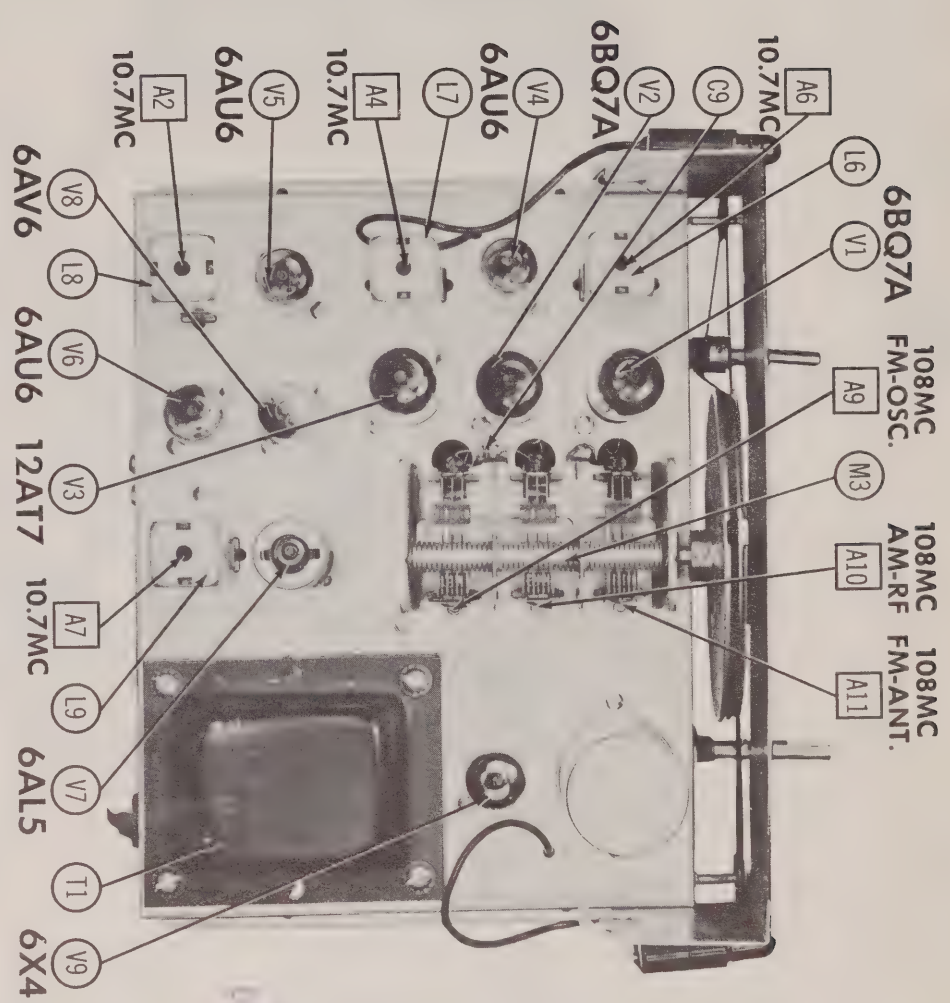
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BROWNING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	1000			BPD-001	DD-102	KO69	801-001	DC-521	5HK-D1	
C4	1000			BPD-001	DD-102	KO69	801-001	DC-521	5HK-D1	
C5	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C6	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C7	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C8	33	500		NP0-SI33	TCZ-33	5R5Q33	NP0L-330	ZT-5433	MS-433	
C9	1			NP0-SI1	TCZ-1	TZ03	NP0A-010		5TCCB-V1	
C10	50	500		NP0-SI50	TCZ-50	5R5Q5	NP0-338-50	MCE225	MS-45	
C11	15			N750-SI15	TCN-15	TN03	N750K-150		5TCU-Q15	
C12	1000			BPD-001	DD-102	KO69	801-001	DC-521	5HK-D1	
C13	10	500		NP0-SI10	TCZ-10	5R5Q1	NP0A-100	MCE215	MS-41	
C14	1000			BPD-001	DD-102	KO69	801-001	DC-521	5HK-D1	
C15	100	500		NP0-SI100	TCZ-100	5R5T1	NP0-337-101	MCB235	MS-31	
C16	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C17	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C18	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C19	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	Note 1
C20	1000			BPD-001	DD-102	KO69	801-001	DC-521	5HK-D1	Note 2
C21	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C22	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C23	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C24	1000			BPD-001	DD-102	KO69	801-001	DC-521	5HK-D1	
C25	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C26	100	500		NP0-SI100	TCZ-100	5R5T1	NP0-337-101	MCB235	MS-31	
C27	1000			BPD-001	DD-102	KO69	801-001	DC-521	5HK-D1	
C28	40000									
C29	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C30	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C31	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C32	47	500		NP0-SI47	TCZ-47	5R5Q47	NP0-338-470	ZT-5447	MS-447	
C33	620	500		1464-00062		1R5T62			MS-362	
C34	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C35	.047	200		BPD-05	DF-503	CUB4S47		PT4147	2TM-S47	
C36	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C37	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	
C38	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C39	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	Note 1
C40	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	

Note 1. Not used in some versions.
Note 2. C20 may be a 10000MMF unit in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BROWNING PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	A10A21484	AB-70	A47-1Meg-Z	Q13-137	U-53	Volume
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BROWNING PART No.	IRC PART No.	
R2	100Ω	½		BTS-100	
R3	10KΩ	1		BTA-10K	
R4	470KΩ	½		BTS-470K	
R5	2200Ω	½		BTS-2200	
R6	680Ω	½		BTS-680	
R7	56KΩ	½		BTS-56K	
R8	10KΩ	1		BTA-10K	
R9	47Ω	½		BTS-47Ω	
R10	390KΩ	½		BTS-390K	
R11	12KΩ	2		BTB-12K	
R12	33KΩ	2		BTB-33K	
R13	330Ω	½		BTS-330	
R14	15Ω	½		BTS-15	
R15	27KΩ	½		BTS-27K	
R16	2200Ω	½		BTS-2200	
R17	68Ω	½		BTS-68	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BROWNING PART No.	IRC PART No.	
R18	27KΩ	½		BTS-27K	
R19	68Ω	½		BTS-68	
R20	100KΩ	½		BTS-100K	
R21	100KΩ	½		BTS-100K	
R22	100KΩ	½		BTS-100K	
R23	33KΩ	½		BTS-33K	
R24	33KΩ	½		BTS-33K	
R25	100KΩ	½		BTS-100K	
R26	100KΩ	½		BTS-100K	
R27	75KΩ 5%	½		BTS-75K 5%	
R28	1Meg	½		BTS-1Meg	
R29	1Meg	½		BTS-1Meg	
R30	5600Ω	½		BTS-5600	
R31	1800Ω	½		BTS-1800	
R32	3300Ω	½		BTS-3300	
R33	1000Ω	7		PW7-1000	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	BROWNING PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	656VCT	6.3V		①	P-9311 ②	P-2952 ②		24R04 ②	R-11B ②
	ⓐ.52A	.070A	ⓐ3.8A							

① 5V winding and 6.3V center tap not used on this set.
② Tape 5V winding and 6.3V center tap.

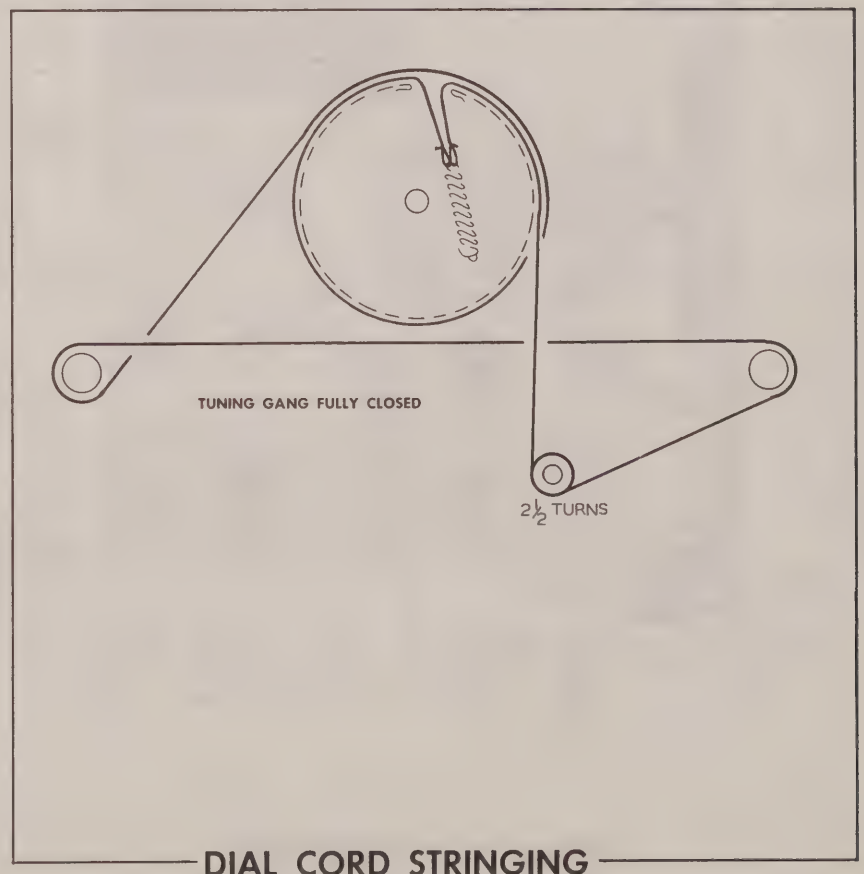
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	BROWNING PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0Ω	0Ω *					* Tapped
L2	Neut. Coil	.1Ω			19-1000		4602	1 Microhenry
L3	FM RF Coil	0Ω						Tapped
L4	FM Osc. Coil	0Ω						Tapped
L5	Fil. Choke	.5Ω			19-1004		4610	5 Microhenries
L6	1st. FM IF	.6Ω	.6Ω	1607-6	16-3487	FM-254	1463	
L7	2nd. FM IF	.6Ω	.6Ω	1607-6	16-3487	FM-254	1463	
L8	3rd. FM IF	.6Ω	.6Ω	1607-6	16-3487	FM-254	1463	
L9	Discriminator	.7Ω	.8ΩCT	2606-1	17-3494	FM-253	1464	

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	BROWNING PART No.	NOTES
M1	Dial Light		#1830
M2	Dial Light		#1830
M3	Tuning Cap.	3367	3 Gang



DIAL CORD STRINGING

CRESCENT
MODEL 2601

CRESCENT
MODEL 2601

TRADE NAME	Crescent Model 2601
MANUFACTURER	Crescent Industries 5900 Touhy Ave., Chicago 31, Ill.
TYPE SET	AC Operated Phono Amplifier with 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AX7 AF Amp., 35L6GT Output, 50Y6GT Rectifier
POWER SUPPLY	105-120 Volts AC-60~ RATING .31 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER-SEE CRESCENT 500 SERIES PHOTOFACT SET #197-FOLDER #4 OR RECORD CHANGER MANUAL CM-5

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PARTS LIST AND DESCRIPTIONS

CRESCENT
Model 2601

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		CRESCENT PART No.	STANDARD REPLACEMENT		
V1	AF Amp.	12AX7	12AX7	9A	
V2	Audio Output	35L6GT	35L6GT	7S	
V3	Rectifier	50Y6GT	50Y6GT	7Q	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CRESCENT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	40	150		PRS150V40	BR4015	TC48	TD-40-150	FM-1540	TVA-1413
C2A	■40	250			BO24			T-090	TVL-2520
B	▲40	150			BR4015				TVA-1413
C	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CRESCENT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	75			SI75	D6-750	TP33	GP1K-750	UC-5475	5GA-Q75	
C4	4700			BPD-0047	DD-502	KO79	811-005	DC-525	5HK-D47	
C5	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C6	4700			BPD-0047	DD-502	KO79	811-005	DC-525	5HK-D47	
C7	2000			BPD-002	DD-202	KO72	801-002	DC-522	5HK-D2	
C8	20000			BPD-02	DF-203	KO85	817-02	PT412	5HK-S2	
C9	20000			BPD-02	DF-203	KO85	817-02	PT412	5HK-S2	
C10	2000			BPD-002	DD-202	KO72	801-002	DC-522	5HK-D2	
C11	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CRESCENT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	½	740059					Volume tapped at 250KΩ
R2	2.5Meg	½	740060					Bass
R3	2.5Meg	½	740060					Treble

RESISTORS

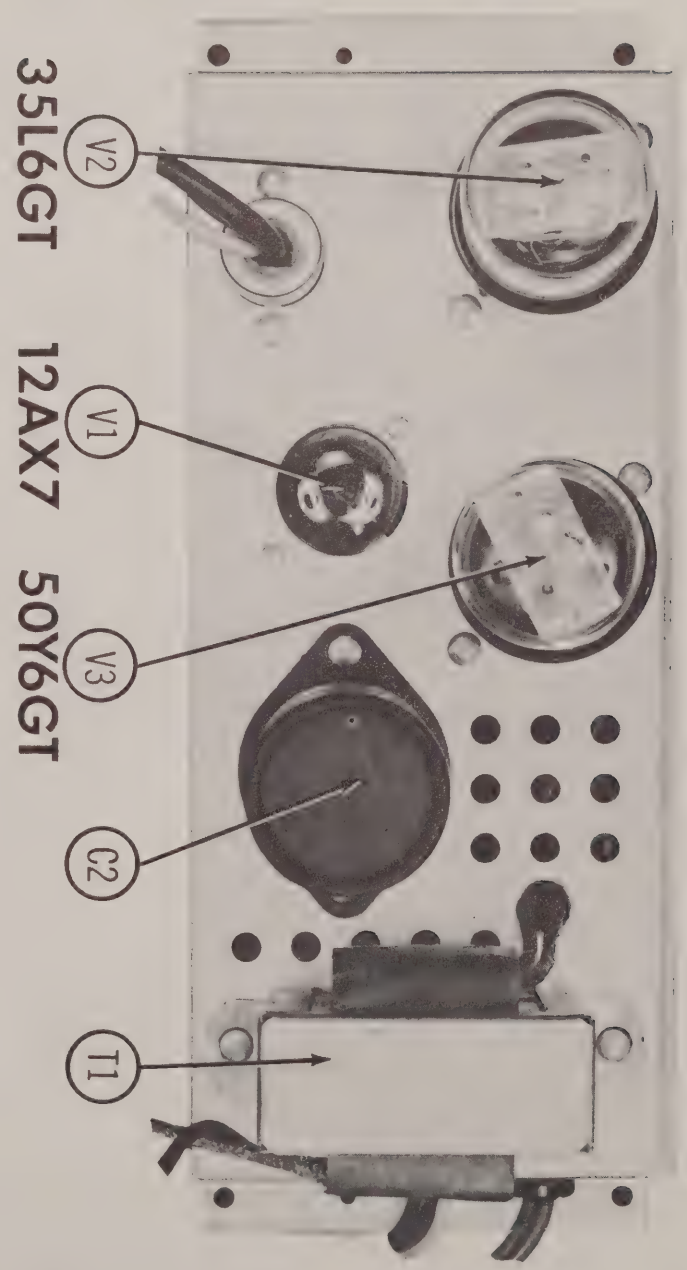
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CRESCENT PART No.	IRC PART No.	
R4	47KΩ	½		BTS-47K	
R5	100KΩ	½		BTS-100K	
R6	1500Ω	½		BTS-1500	
R7	100KΩ	½		BTS-100K	
R8	100KΩ	½		BTS-100K	
R9	2200Ω	½		BTS-2200	
R10	100KΩ	½		BTS-100K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CRESCENT PART No.	IRC PART No.	
R11	470KΩ	½		BTS-470K	
R12	150Ω	½		BTS-150	
R13	15KΩ	½		BTS-15K	
R14	10KΩ	5		1 3/4A-10K	
R15	9000Ω	5		1 3/4A-9000	
R16	33Ω	1			
R17	120Ω	10			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CRESCENT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5.4KΩ	L65Ω	700070	Z1007	A-2902	A-3849	26S46		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CRESCENT PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3. 3Ω	011645	52A21LF ①	① When ordering, specify open air resonant freq. of 90∿.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	CRESCENT PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		55-T	GD-J	47	0-1 or S-1 and 0-3	

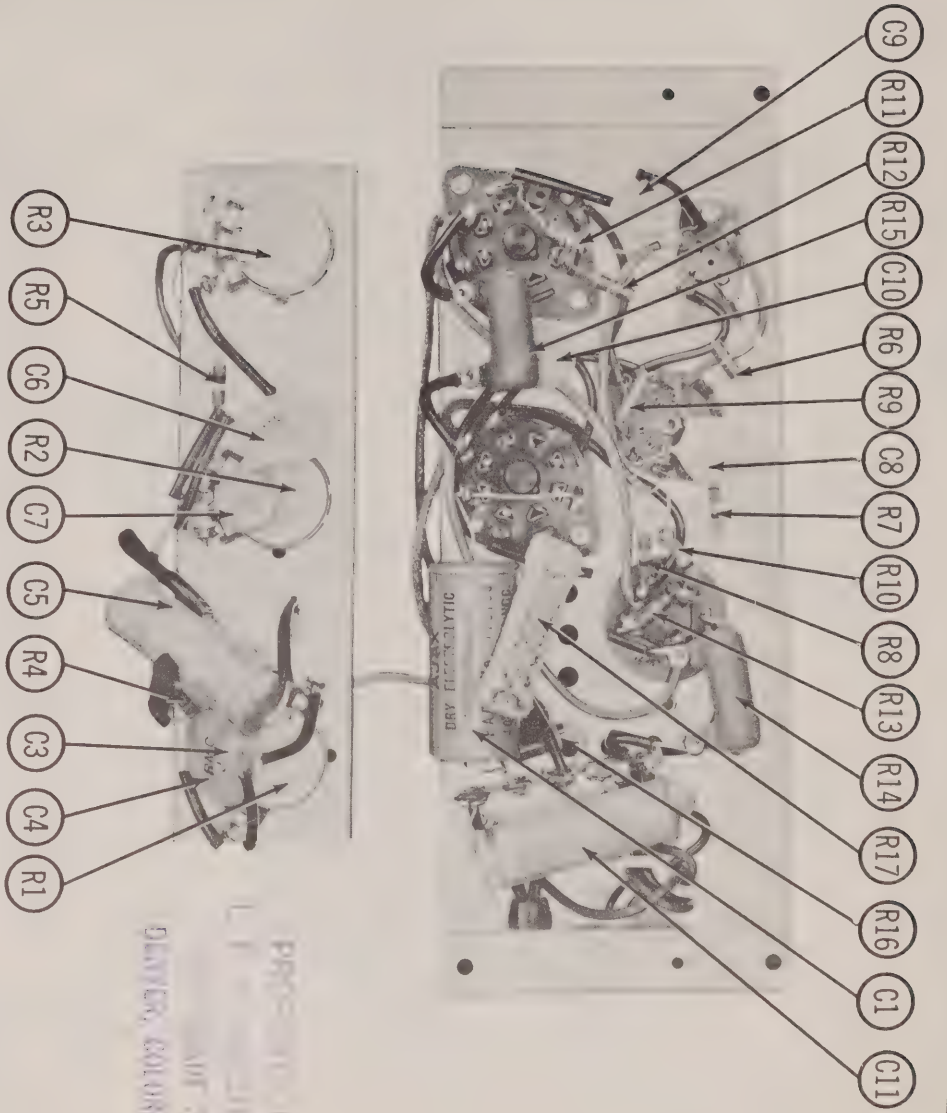
ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

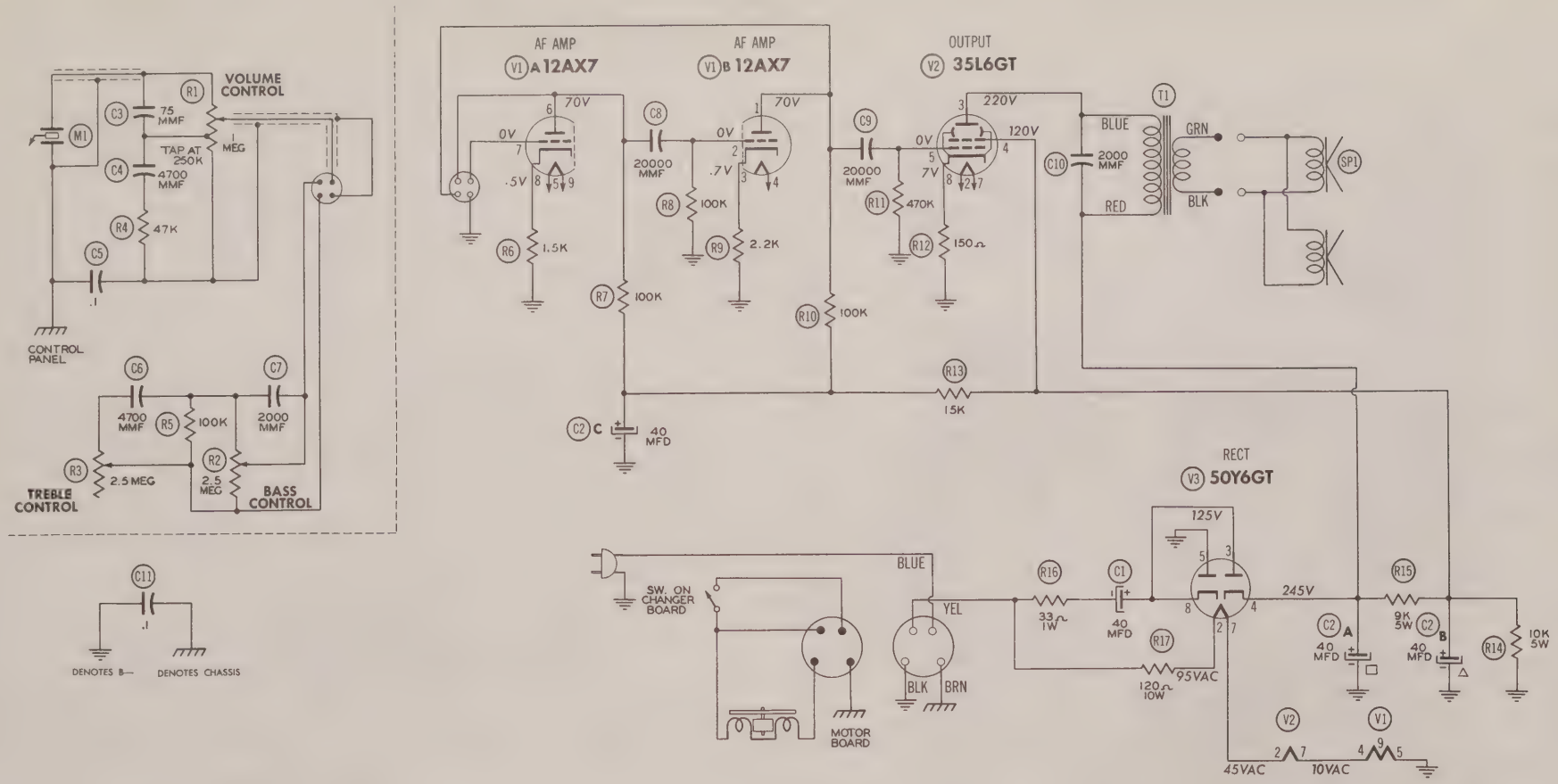
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	CRESCENT PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2		*S-67 or †S-66 or ♦†S-66SD or ♦S-66D	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D	†W-75TPS or ♦†W-75DS or ♦W-75TPD	* Metal † Jewel ♦ Diamond

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†124KΩ	100KΩ	2.2KΩ	12Ω	0Ω	†124KΩ	0Ω	1.5KΩ	6Ω
V 2	35L6GT	NC	47Ω	†500Ω	†9KΩ	470KΩ	NC	12Ω	150Ω	
V 3	50Y6GT	NC	97Ω	130KΩ	20KΩ	0Ω	NC	47Ω	130KΩ	

ALL MEASUREMENTS WITH PHONO MOTOR DISCONNECTED.
NC-NO CONNECTION
†MEASURED FROM PIN 4 OF V3.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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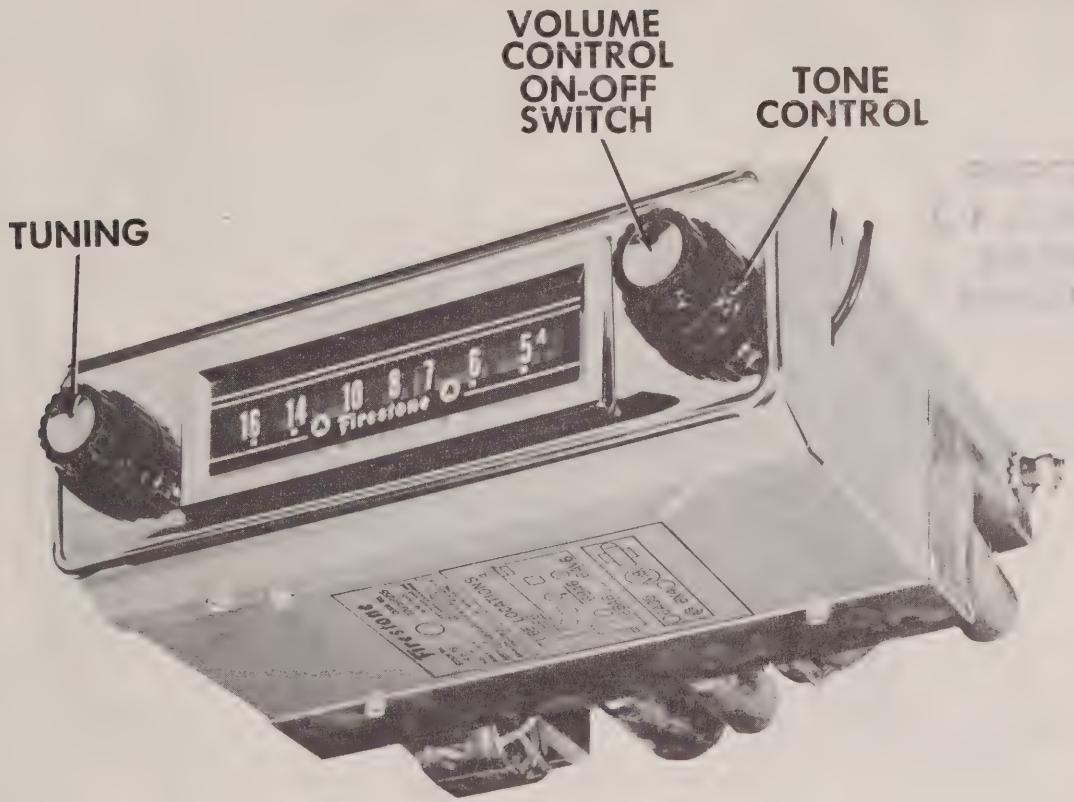
FIRESTONE MODEL 4-B-78
(Code 120-5-P255)



FIRESTONE MODEL 4-B-78
(Code 120-5-P255)

TRADE NAME	Firestone Model 4-B-78 (Code 120-5-P255) (For 1955 Plymouth Automobiles)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Pkwy., Akron, Ohio
TYPE SET	Battery Operated Custom Built AM Superheterodyne Automobile Receiver
TUBES (Six)	Types: 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 (or) 6AT6 Det.-AVC-AF Amp., 6AQ5 Output, 35W4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.4 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538KC-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~Mod)	High freq. end of dial	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1610KC	"	"	A5	"
3.	68MMF	High side to antenna receptacle. Low side to chassis.	1400KC	Tune to 1400KC signal	"	A6, A7	Adjust for maximum output.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum volume.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		FIRESTONE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det.-AVC-AF Amp	6AV6	6AV6	7BT	6AT6 used as an alternate
V5	Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■20	350	CE-86	AFH3-107	CO80	FP330	TM-3029	T-470	TVL-3678
B	▲20	350							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	100		CC101	NP0-S1100	TCZ-100	TZ30	NP0-337-101	ZT-531	5TCC-T1	
C3	5000			S15000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	Note 1
C4	.068	200		P288N-068		CUB4S68			4TM-S68	Note 2
C5	5		CC50	NP0-D15	TCZ-4R7	Z011	NP0A-050	ZT-555	5TCCB-V47	
C6	40		CC400							
C7	.05	200	C503-02	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C8A	220									
B	5000									
C	5000		♦PC-151	♦PA-113-2	♦PC-151	♦116TM2	♦1408-02		♦DT-2	
D	250									
E										
C9	4700	500		SI4700	D6-472	1W5D47	GP2-333-472	UC-5247	1FM-247	Note 3
C10	.015	400		BPD-015	D16-153	CUB4S15	821-015	PT6115	4TM-S15	Note 4
C11	.01	600	C103-6	BPD-01	D6-103	CUB6S1	GP3-333-103	PT611	6TM-S1	
C12	.005	1600		P1688N-005		CUB16D5		PT1625	MB-D5	Note 5
C13	.5	100	C504-1	P185N-5		MP2P5		RF480	68P20	
C14	.5	100	C504-1	P185N-5		MP2P5		RF480	68P20	

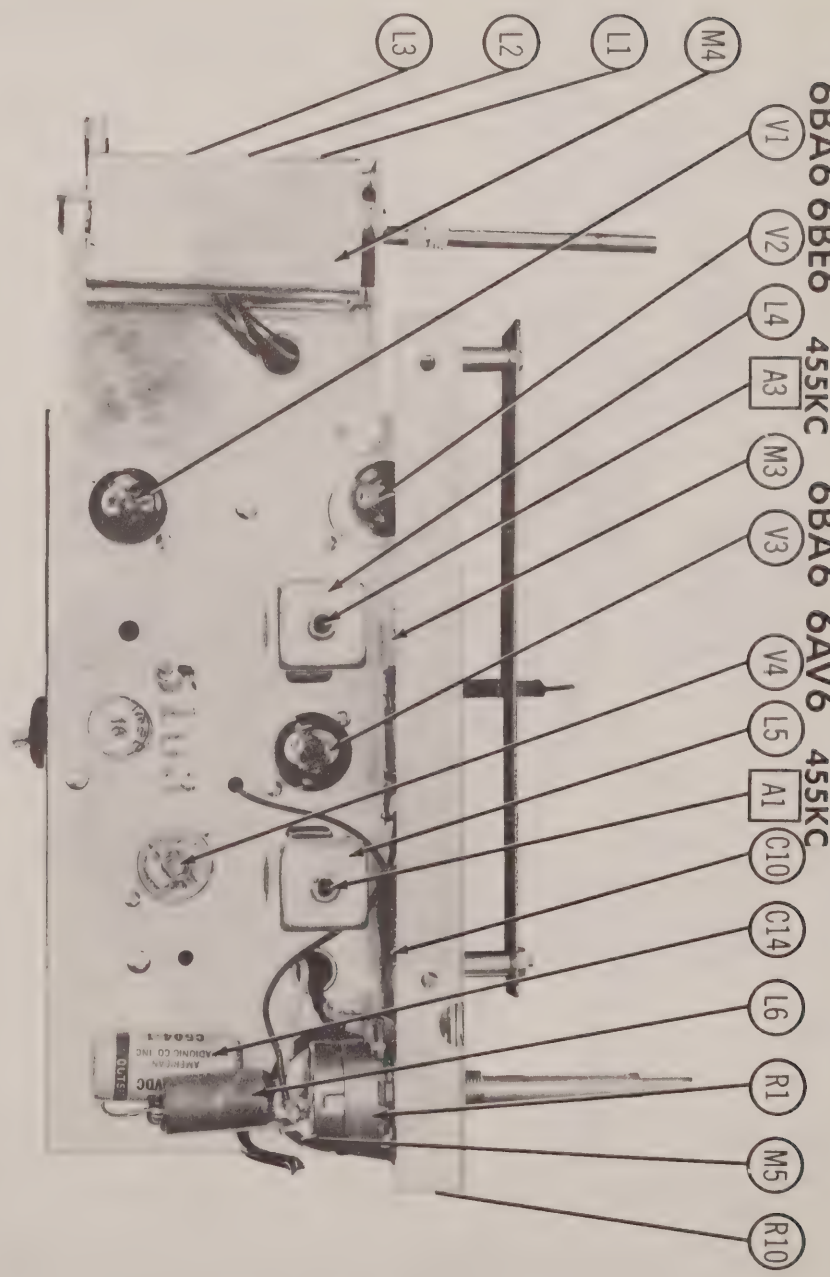
Note 1. Some versions may use a .006MFD unit (part #C602-4) in this application.
Note 2. Some versions may use a .05MFD unit (part #C503-2) in this application.
Note 3. Some versions may use a .002MFD unit (part #CC202) in this application.
Note 4. Some versions may use a .01MFD unit (part #CC103) in this application.
Note 5. Some versions may use a .008MFD unit (part #C802-16) in this application.
♦ Items C8A, C8B, C8C, C8D, C8E, R9A, R9B and R9C are combined in one unit. When replacing items separately, C8D and C8E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2Meg	½	RV666	F1-71		QJ-840A ♦	UF26A	Tone - Panel
B	500KΩ	½		R2-48			UR55-T154	Volume-rear -tap@130KΩ
C	Switch			KB-4			US-26	Attach to R1B

♦ Concentrikit Equivalent: K-6 Kit, Base Elements & Shafts: B13-139, P14-125 (Panel)
B13-133X, R1-205 (Rear)
76-1 (Switch)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FIRESTONE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	470KΩ	½	R474	BTS-470K	
R3	300Ω	½		BTS-370	Note 1
R4	150KΩ	½	R154	BTS-150K	
R5	47KΩ	½	R473	BTS-47K	
R6	6800Ω	2	R682-2	BTS-6800	
R7	1000Ω	1	R102	BTS-1000	
R8	2.2Meg	½	R225	BTS-2.2Meg	
R9A	6.8Meg	½	} aPC-151	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R10	22KΩ	½	R223	BTS-22K	
R11	330Ω	½	R331	BTS-330	
R12	1000Ω	1	R102-1	BTA-1000	
R13	82Ω	½	R820	BTS-82	
R14	82Ω	½	R820	BTS-82	

Note 1. Some versions use a 220Ω, ½ watt resistor in this application (Mfgr. part #R221).
a Items C8A, C8B, C8C, C8D, C8E, R8A, R8B, R8C are combined in one unit.

TRANSFORMER (VIBRATOR)

ITEM No	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA FIRESTONE PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No.	Triad PART No
T1	6.3VCT @2.8A	460VCT .050ADC			TV100C TV100/A/B ①				32R20 ②	

① Alternate vibrator transformers.
② Remove frame, use channel frames package with unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5.2KΩ	3.5Ω	TO4503	Z1107	A-2930	A-3877	34S1	S-3X	

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA FIRESTONE PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3.5Ω	PM327	6A1	

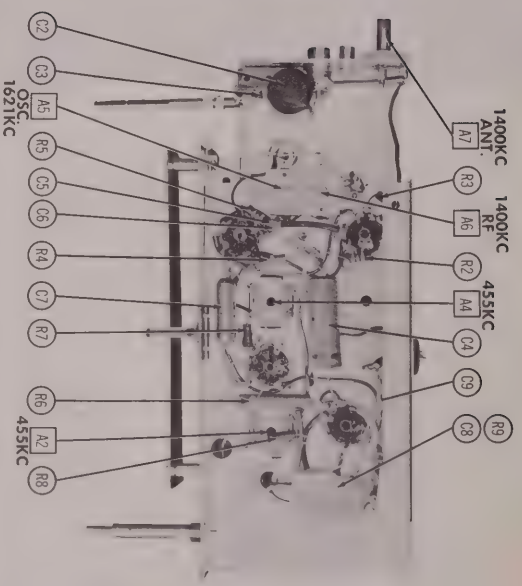
COILS (RF-IF)

ITEM No.	USE	DC RES. PRI	DC RES. SEC.	REPLACEMENT DATA FIRESTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	13Ω						Part of complete assy.
L2	RF Coil	13Ω						Part of complete assy.
L3	Osc. Coil	.4Ω	3.4Ω					Part of complete assy.
L4	Input IF	16Ω	16Ω	1655-6	18-6758	BC-353	13-C1	
L5	Output IF	16Ω	16Ω	1655-6	18-6758	BC-353	12-C2	
L6	Fil Choke	0Ω		L203	19-4215	BC-537	5221	
L7	Vib. Hash Choke	0Ω		L202				

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA FIRESTONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	NOTES
M1	Interruptor	6.3V	115	V-83	8301	859	8301	

CHASSIS—BOTTOM VIEW



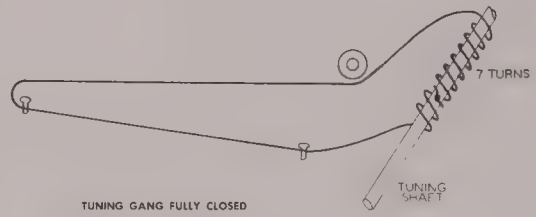
PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

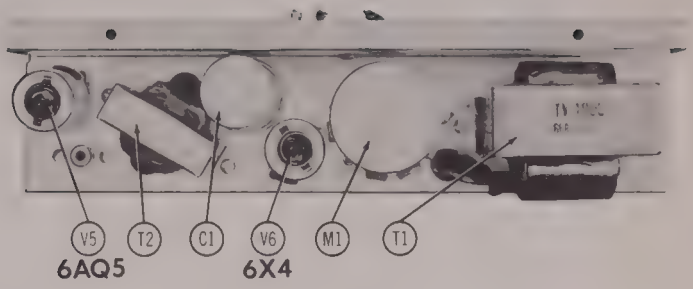
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FIRESTONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	A200	FH256	307014. (SFE 14A)	155014	SFE14	HR1

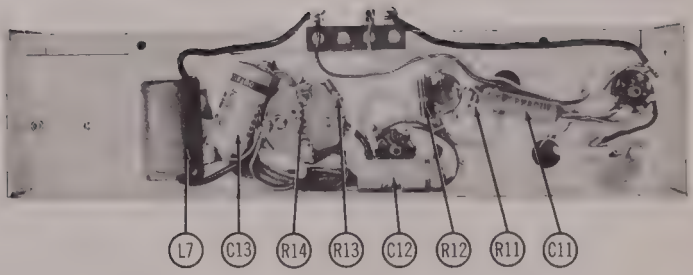
MISCELLANEOUS

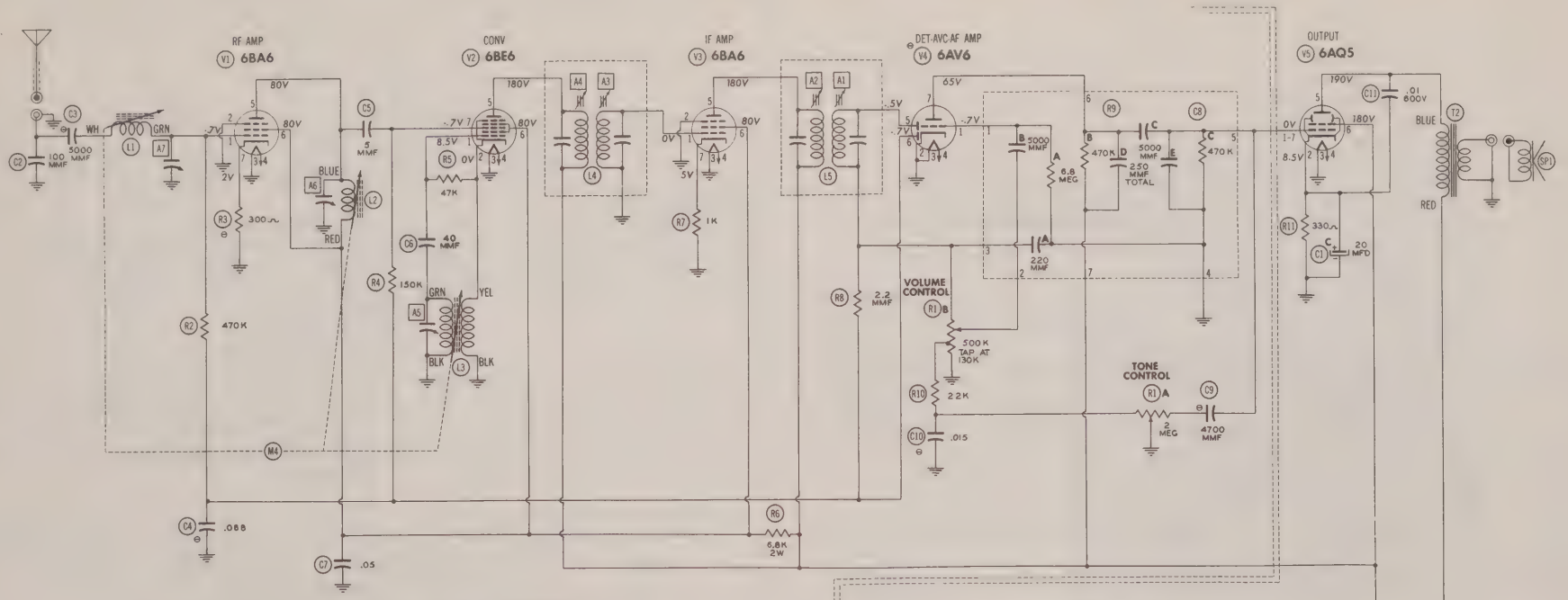
ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	Dial Light	T47	#47
M4	Tuner	PT325DC	Permeability, includes L1, L2, L3
M5	Spark Plate	X215	
	Trimmer Cap.	CT-3	Osc. Trimmer
	Trimmer Cap.	CT-2	RF Trimmer
	Trimmer Cap.	CT-1	Ant. Trimmer
	Knob	H710	On-off-volume
	Knob	H910	Tuning
	Knob	H831	Tone
	Dial Scale	D325	
	Dial Pointer	P8325	



DIAL CORD STRINGING


V5
T2
C1
V6
M1
T1
6AQ5
6X4

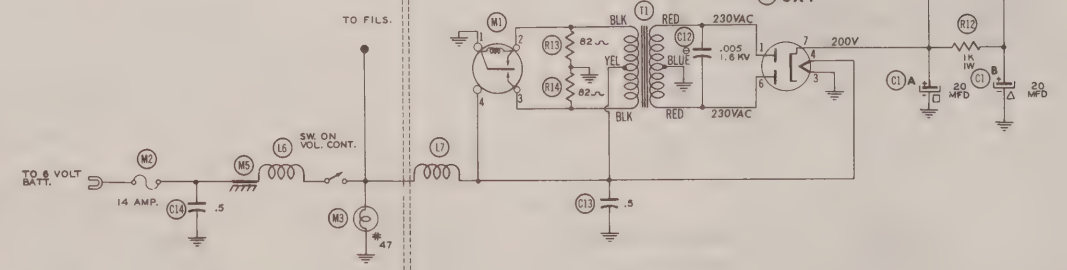

L7
C13
R14
R13
C12
R12
R11
C11



IF = 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	3.1Meg	0Ω	0Ω	.4Ω	†7.8KΩ	†7.8KΩ	300Ω
V 2	6BE6	47KΩ	.5Ω	0Ω	.4Ω	†1KΩ	†7.8KΩ	2.8Meg
V 3	6BA6	15Ω	0Ω	0Ω	.4Ω	†1KΩ	†7.8KΩ	1KΩ
V 4	6AV6	6.8Meg	0Ω	0Ω	.4Ω	500KΩ	2.7Meg	† 470KΩ
V 5	6AQ5	470KΩ	330Ω	0Ω	.4Ω	†350Ω	†1KΩ	470KΩ
V 6	6X4	300Ω	NC	0Ω	.4Ω	NC	300Ω	150KΩ

† MEASURED FROM PIN 7 OF V6.
NC - NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on components values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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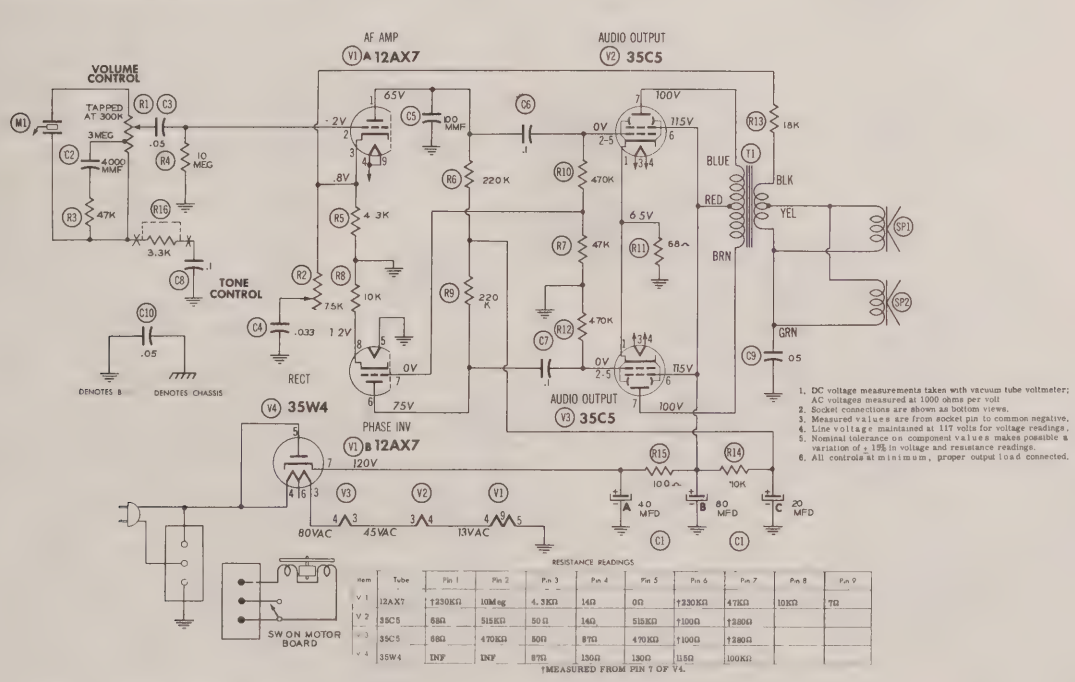
MITCHELL
MODELS 1285, 1286

TRADE NAME	Mitchell Models 1285, 1286 (Chassis 1285)
MANUFACTURER	Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Ill.
TYPE SET	AC Operated Phono Amplifier with 3 Speed Automatic Record Changer
TUBES (Four)	Types 12AX7 AF Amp. -Phase Inv., (2) 35C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60∿ RATING .33 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER-SEE SIMILAR V-M MODEL 950-PHOTOFACT SET #216-FOLDER #11 OR RECORD CHANGER MANUAL CM-5



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†230KΩ	10Meg	4.3KΩ	1kΩ	0Ω	†230KΩ	47KΩ	10KΩ	7Ω
V 2	35C5	68Ω	515KΩ	50Ω	14Ω	515KΩ	†100Ω	†380Ω		
V 3	35C5	68Ω	470KΩ	50Ω	87Ω	470KΩ	†100Ω	†380Ω		
V 4	35W4	INF	INF	87Ω	130Ω	130Ω	15Ω	100KΩ		

†MEASURED FROM PIN 7 OF V4.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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307-8

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: MITCHELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	AF Amp. - Phase Inverter	12AX7	12AX7	9A	
V2	Output	35C5	35C5	7CV	
V3	Output	35C5	35C5	7CV	
V4	Rectifier	35W4	35W4	5BQ	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: MITCHELL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V80-40-20	BBRT84215	3N538	TDL-804020-150	FMT-339	TVA-3455
B	80	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	4000			BPD-004	DD-402		801-004	DC-524	5HK-D4	
C3	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C4	.033	400		P488-033		CUB4S33		PT4133	4TM-S33	
C5	100									
C6	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C7	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C8	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C9	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C10	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MITCHELL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3Meg	½	BA013-037					Volume tapped at 300KΩ
R2A	7500Ω	½	BA011-1296	AB-13	A47-7500-S	Q11-115	U-20	Tone
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	NOTES
R3	47KΩ 5%	½		BTS-47K 5%	
R4	10Meg	½		BTS-10Meg	
R5	4300Ω	½		BTS-4300	
R6	220KΩ	½			
R7	47KΩ 5%	½		BTS-47K 5%	
R8	10KΩ	½		BTS-10K	
R9	220KΩ	½			
R10	470KΩ	½		BTS-470K	
R11	68Ω	2			
R12	470KΩ	½		BTS-470K	
R13	18KΩ	½		BTS-18K	
R14	10KΩ	½		BTS-10K	
R15	100Ω	2			
R16	3300Ω	½		BTS-3300	Note 1

Note 1. Not used in some versions.

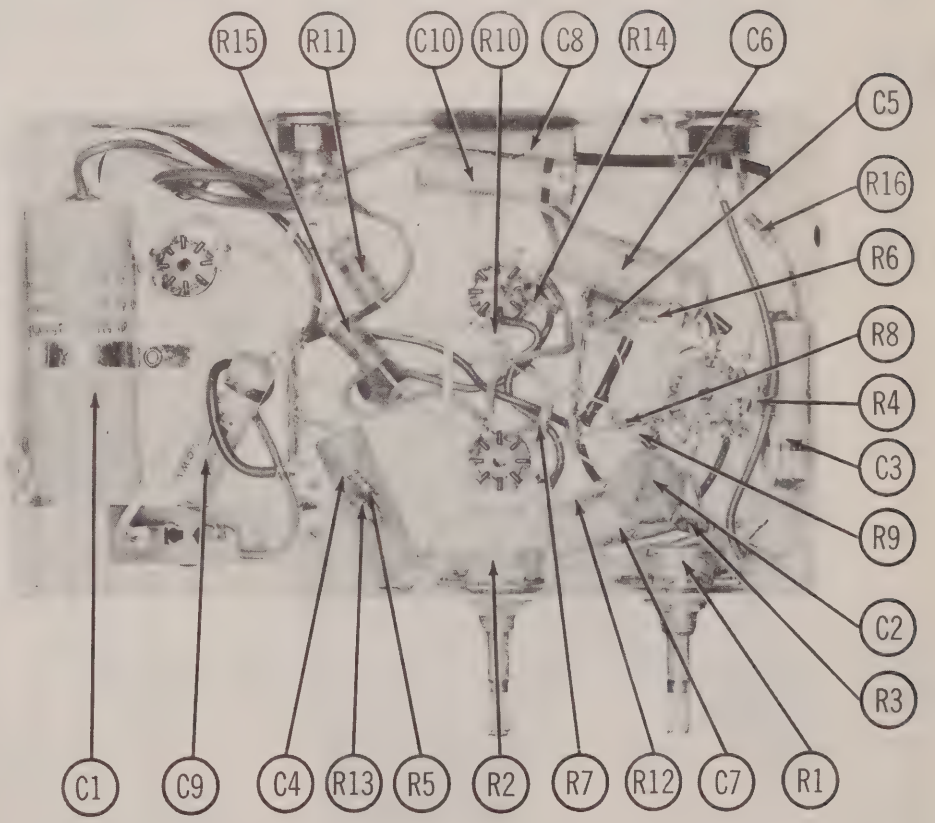
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: MITCHELL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	6.2KΩ CT	1.8Ω							

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: MITCHELL PART No.	QUAM PART No.	NOTES
SP1	4"x 6"	PM	3.6Ω		46A1	
SP2	4"x 6"	PM	3.6Ω		46A1	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: MITCHELL PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M1				47	0-2 or S-2	

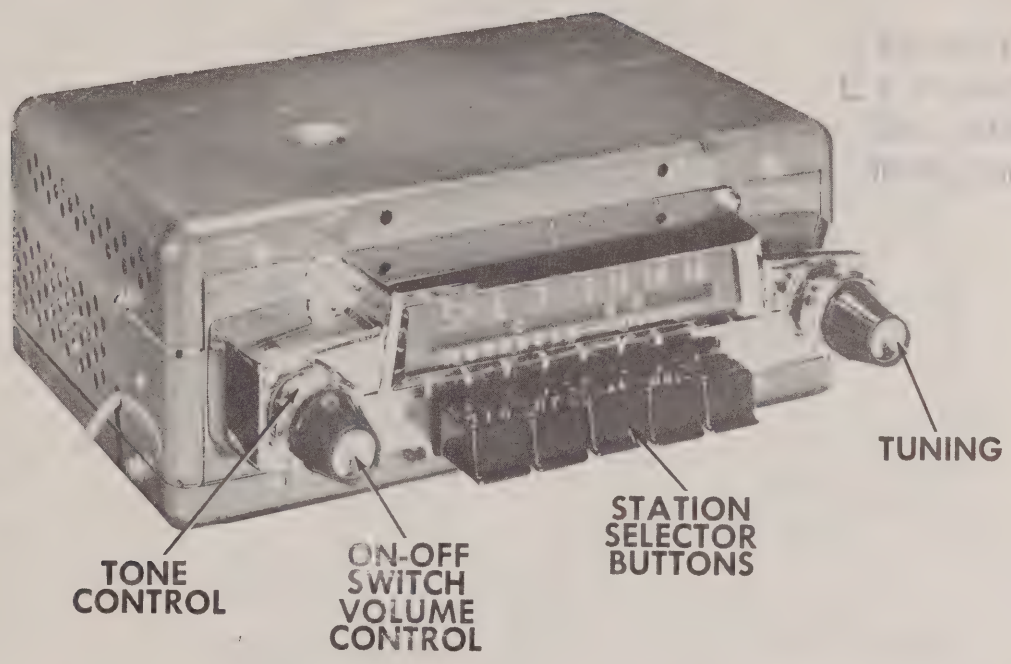
ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: MITCHELL PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2		*S-67 or †S-66 or ♦†S-66SD or ♦S-66D	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D or	†W-75TPS or ♦†W-75DS O or ♦W-75TPD	* Metal † Jewel ♦ Diamond

MOTOROLA MODELS
555, 555-12, 595, 595-12



MOTOROLA MODELS
555, 555-12, 595, 595-12

TRADE NAME	Motorola Models 555, 555-12, 595, 595-12
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Battery Operated Universal AM Superheterodyne Automobile Receiver
TUBES (Six)	12BD6 RF Amp., 12BE6 Converter, 12BD6 IF Amp., 12CR6 Det.-AVC-AF Amp., 12AQ5 Output, 12X4 Rectifier (or Equivalent 6 Volt Tubes)
POWER SUPPLY	12 Volt Storage Battery (Models 555-12, 595-12) RATING 3 Amp. @ 12.6 Volts DC (or)
	6 Volt Storage Battery (Models 555, 595) 6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	535KC-1605KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Tone control to maximum.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	455KC (400~ Mod.)	High frequency end stop	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to ant. receptacle	1605KC	"	"	A5, A6, A7	"
*3.	"	"	1180KC	Set tuner 19/64" from high freq. end stop.	"	A8, A9, A10	Adjust for maximum output. Use motorola alignment tool (Part No. 66A76278). Repeat steps 2 & 3.
*4.				Weak signal around 1400KC		A7	With receiver installed adjust for maximum volume.

* Back tuner cores out of coils but not out of coil forms.
Steps 3 & 4 not necessary except in case of replacement of component or tampering in tuner.

PUSH BUTTON ADJUSTMENT

Pull out push button, tune to desired frequency manually.
Push push button in firmly. Repeat for remaining push buttons.

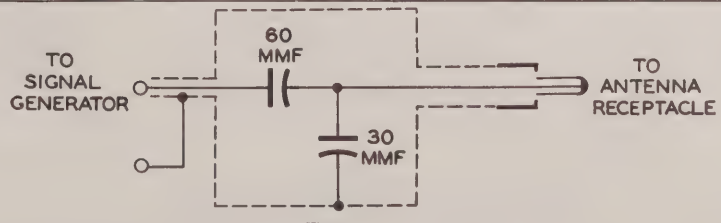


FIG. 1

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PARTS LIST AND DESCRIPTIONS

MOTOROLA
Model 555

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		MODEL 595
V1	RF Amp.	12BD6	12BD6	7BK	6BD6
V2	Converter	12BE6	12BE6	7CH	6BE6
V3	IF Amp.	12BD6	12BD6	7BK	6BD6
V4	Det. -AVC-AF Amp.	12CR6	12CR6	7EA	6CR6
V5	Audio Output	12AQ5	12AQ5	7BZ	6AQ5
V6	Rect.	12X4	12X4	5BS	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■15	350	23A485677	AFH3-104	C077	FP328	TM-3026	T-455	TVL-3630
B	▲10	350							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	90		21A591682							
C3	.006	400	8R121001	SI6000	D6-602	CUB6D6	GP3-333-602	PT626	6TM-D6	
C4	.05	200	8R121005	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C5	.05	200	8R121005	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C6	4.7		21R115955	NPO-SI4.7	TCZ-4R7	TZ07	NPOA-4R7	ZT5547	5TCCB-V47	
C7	100		21R120124	NPO-SI100	TCZ-100	TZ30	NPO-337-101	ZT-531	5TCC-T1	
C8	47		21R115593	N750-DI47	TCN-47	NO33	N750K-470	NT-5447	5TCU-Q47	
C9	400		21A71872							
C10	.05	400	8R121567	BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C11	10000		21R482726	BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C12	1000		21R115860	1464-001		1R5D1	801-001	MCB235	MS-21	
C13	.02	400	8R121566	BPD-02	DF-203	CUB4S2	817-02	PT412	4TM-S2	
C14	.1	200	8R121573	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C15	10000		21R482726	BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C16	470		21R115856	SI470	DD-471	KO60	811-471	UC-5347	5GA-T47	
C17	470		21R114554	SI470	DD-471	KO60	811-471	UC-5347	5GA-T47	
C18	.006	400	8R121001	SI6000	D6-602	CUB6D6	GP3-333-602	PT626	6TM-D6	
C19A	300		21A522033							
B	300									
C20	.04	1000	8R121549	P1088N-04		CUB16S4		PT1614	MB-S4	Note 1
C21	.5	100	8K122076	P185N-5		MP2P5		RF480	68P20	
C22	.5	100	8K122076	P185N-5		MP2P5		RF480	68P20	Note 2
C23	.5	100	8K121666	P185N-5		MP2P5		RF480	68P20	
C24A	300		21A522033							
B	300									

Note 1. Chassis 595 and 555 use a .02MFD -1000 volt unit (Part No. 8R121004) in this application.
Note 2. Not used in chassis 595 and 555.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	18B531539	F1-55		QJ-720A♦	UE1654S	Tone (Panel)
B	250KΩ	½		R4-37				Volume (Rear) Tap at 125KΩ
C	Switch			KB-4				Attach to R1B.

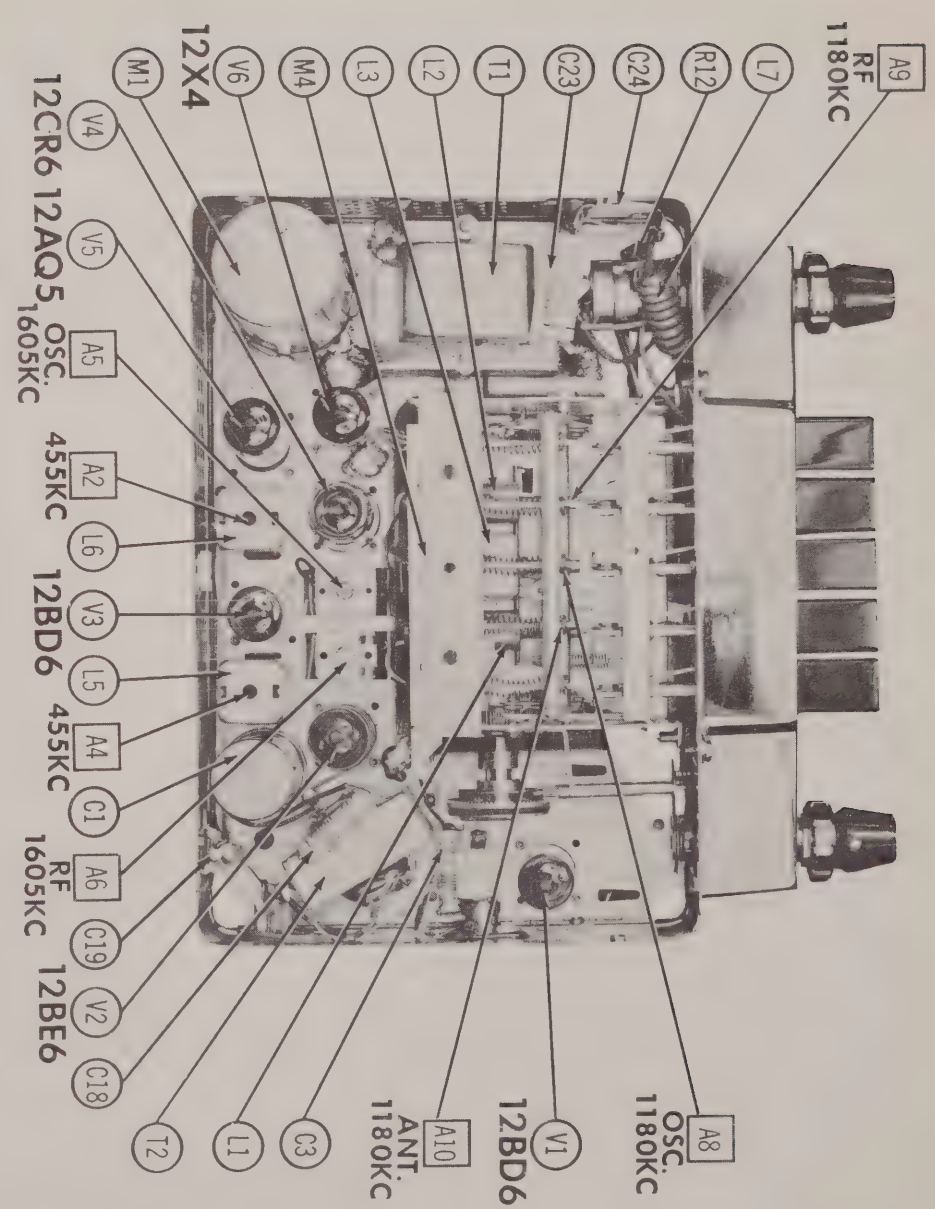
♦ Concentrikit Equivalent; K-6 Kit, Base Elements and Shafts; B11-137, P17-126 (Panel)
B13-130X, R1-207 (Rear)
76-1 Switch

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	1Meg	½	6R6004	BTS-1Meg	
R3	18KΩ	½	6R5591	BTS-18K	
R4	560Ω	½	6R6291	BTS-560	
R5	22KΩ	½	6R6028	BTS-22K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R6	6800Ω	1	6R5690	BTS-6800	
R7	220Ω	½	6R6270	BTS-220	Note 1, 2
R8	1Meg	½	6R6004	BTS-1Meg	
R9	2.2Meg	½	6R3927	BTS-2.2Meg	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R10	1Meg	1/2	6R6004	BTS-1Meg	
R11	220KΩ	1/2	6R6015	BTS-220K	
R12	15KΩ	1/2	6R2119	BTS-15K	
R13	270KΩ	1/2	6R6414	BTS-270K	
R14	4.7Meg	1/2	6R2122	BTS-4.7Meg	
R15	270Ω	1/2	6R6432	BTS-270	
R16	2200Ω	2	6R476130	BTB-2200	
R17	56Ω	1/2	6R2037	BTS-56	Note 3
R18	56Ω	1/2	6R2037	BTS-56	Note 3

Note 1. Some versions use a 150Ω 1/2W resistor in this application.
Note 2. Some versions use a 82Ω 1/2 W resistor in this application.
Note 3. Used in Models 555 & 595 only.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	6.3VCT @3A	460VCT .047ADC			25C501303-J *	V-3801①	P-2970①	P-6478①②		V-16K ①
T1	12.6VCT @1.5A	476VCT .051ADC			25C521841 †					

① Mounting difference.
② Enlarge cut out.
* Used in 6 Volt Versions.
† Used in 12 Volt Versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5.2KΩ	3.5Ω	25B70171-P	Z1107	A-2930	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	6 x 9"	PM	3.5Ω	50C534058 ① 50C533088 ②	69A3	① Used in Models 595 and 595-12 ② Alternate PM speaker used in Models 595, 595-12
SP1	5 x 7"	PM	3.5Ω	50C522055③	57A1	③ Used in Models 555 and 555-12

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	13Ω		24K522272				
L2	RF Coil	13Ω		24B522271				
L3	Osc. Coil	.8Ω	3.6Ω	24B522270				
L4	Fil. Choke	0Ω		24A522284	19-1001		4604	1.3 Microhenries
L5	Input IF	18Ω	18Ω	24C485553	16-6758	BC-352	12-C1	
L6	Output IF	18Ω	18Ω	24K485554	16-6770	BC-355	12-C6	
L7	Fil. Choke	0Ω		24K522091	19-4125		5221	
L8	Vib. Hash Choke	.1Ω		24A521816				Used in Models 555-12 & 595-12 - Note 1

Note 1. Part #24A512119 used in Models 555 & 595.

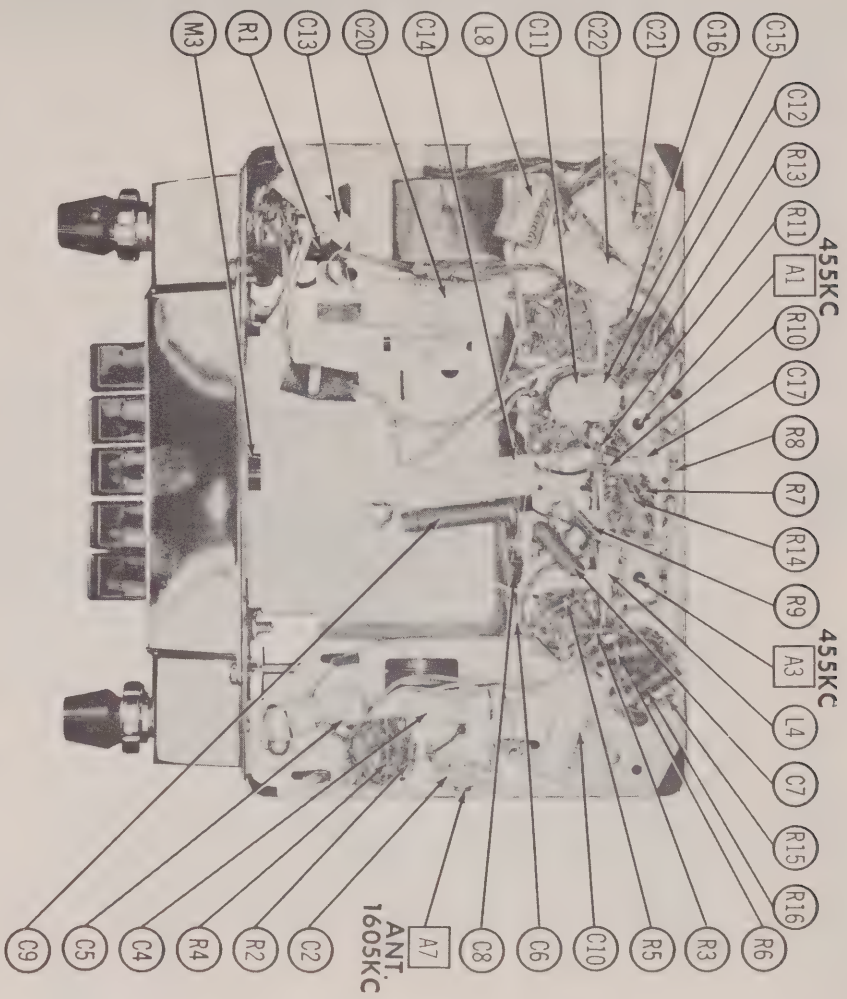
VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	NOTES
M1	Interrupter	6.3V	115∿	48B3333 *	5342	903M	5342	* 6 Volt Versions
M1	Interrupter	12.6V	115∿	48B522000†	6326	G859	6329	† 12 Volt Versions

FUSES

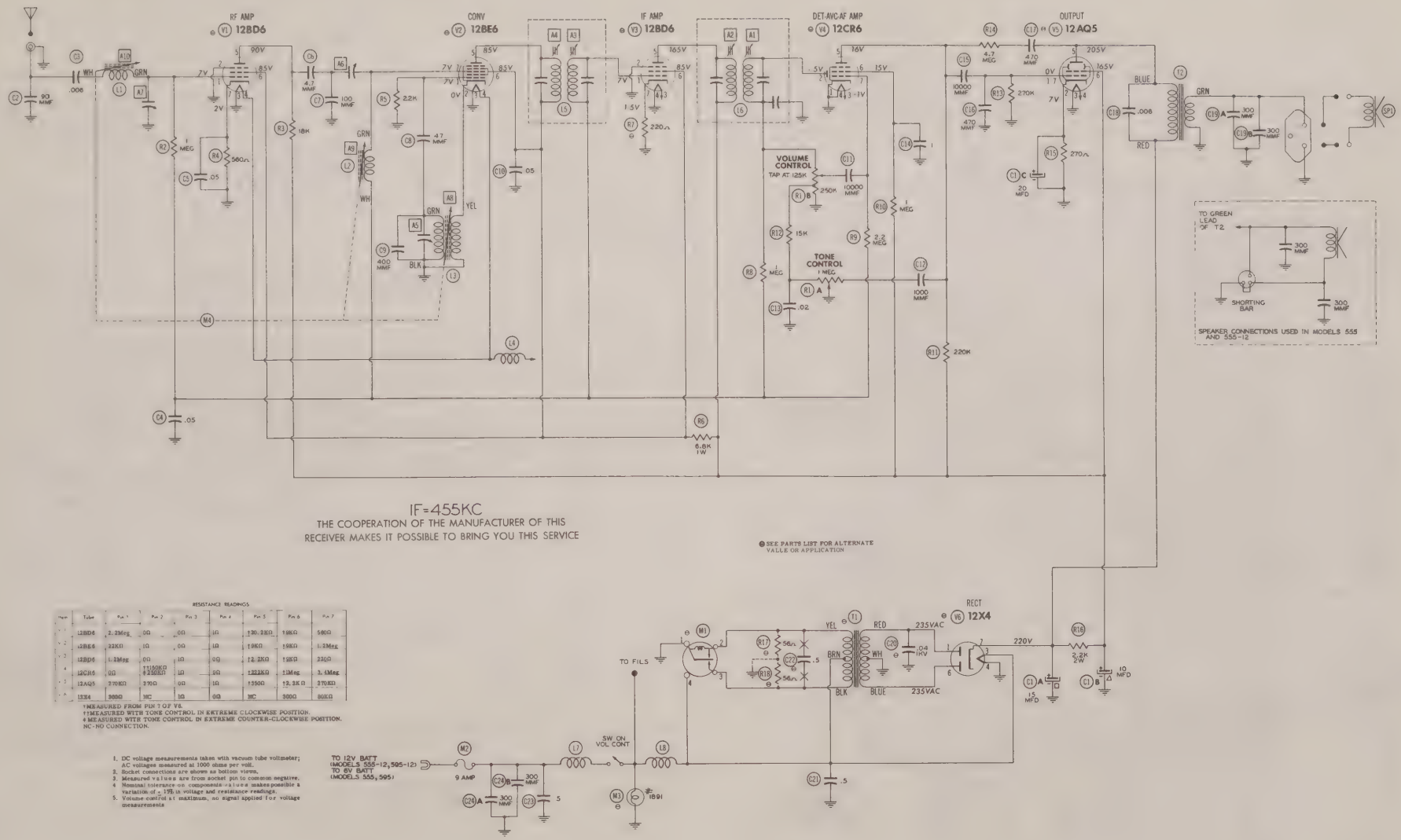
ITEM No.	TYPE	RATING	MOTOROLA PART No. FUSE	MOTOROLA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	SFE	9A	65X16248	9K592648	307009. (SFE 9A)	155009	SFE9	HRH

CHASSIS—BOTTOM VIEW



MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Dial Light	65T533821	#1891-Models 555-12, 595-12
	Dial Light	65X10867	#44-Models 555, 595
M4	Tuner	77D522054	Permeability (Complete); Includes L1, L2, L3
	Trimmer Cap.	20A77537	Osc. Trimmer (50MMF Nom.)
	Trimmer Cap.	20A481526	RF Trimmer (100MMF Nom.)
	Trimmer Cap.	20A513232	Ant. Trimmer (75MMF Nom.)
	Knob	36K522022	Dummy
	Knob	36B522020	Tone
	Knob	36B522008	On-Off-Volume
	Push Button	1U522215	5 used
	Dial Scale	34B533825	
	Dial Pointer	52A522009	



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

● SEE PARTS LIST FOR ALTERNATE VALUE ON APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BD6	2.2MEG	0Ω	0Ω	1Ω	†20.2KΩ	†8KΩ	580Ω
V2	12BE6	32KΩ	1Ω	0Ω	1Ω	†8KΩ	†8KΩ	1.2MEG
V3	12BD6	1.2MEG	0Ω	1Ω	0Ω	†2.2KΩ	†2KΩ	230Ω
V4	12CR6	0Ω	††160KΩ ‡250KΩ	1Ω	0Ω	†223KΩ	†1MEG	3.4MEG
V5	12AQ5	270KΩ	270Ω	0Ω	1Ω	†350Ω	†2.2KΩ	270KΩ
V6	12X4	300Ω	NC	1Ω	0Ω	NC	300Ω	80KΩ

†MEASURED FROM PIN 7 OF V6.
††MEASURED WITH TONE CONTROL IN EXTREME CLOCKWISE POSITION.
‡MEASURED WITH TONE CONTROL IN EXTREME COUNTER-CLOCKWISE POSITION.
NC-NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on components-values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements

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PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

PACKARD-BELL MODELS 21103A, 21103A-U, 21202A, 21202A-U, 21401A, 21401A-U, (Ch. T-1A)

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PACKARD-BELL MODEL 21401A-U

TRADE NAME	Packard-Bell Models 21103A, 21103A-U, 21202A, 21202A-U, 21401A, 21401A-U (Ch. T-1A)
MANUFACTURER	Packard-Bell Co.-Service Div., 11th. & Hope Sts., Los Angeles 15, Calif.
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.7 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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PACKARD-BELL MODELS 21103A, 21103A-U, 21202A, 21202A-U, 21401A, 21401A-U, (Ch. T-1A)

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DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type control knobs and UHF dial from front panel of cabinet.

2. Remove 7 wood screws. Remove rear cover.

3. Disconnect speaker plug.

4. Remove 4 chassis bolts. Remove chassis.

5. Remove 4 wood screws. Remove speaker.

MODEL	CHASSIS
21103A, 21202A, 21202A-U, 21401A, 21401A-U	T-1A

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet above and slightly to the left of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 3 wood screws holding plastic strip at the top edge of the safety glass. Remove plastic strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See Disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

SPECIAL ADJUSTMENTS

A. Picture lock Control Adjustment

1. Turn picture lock control (R2B) fully counter clockwise in strong signal areas.

2. In weak signal areas turn the control clockwise until picture begins to distort. Turn the control back counter clockwise beyond the point where the distortion disappears.

3. Check picture stability on all channels. If control is not adjusted on weakest signal available, synchronization may be lost on some other stronger channel.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the front panel of the chassis. Adjust the horizontal hold control until picture synchronizes horizontally. Switch off channel and back again. If picture loses sync slightly retouch horizontal hold control.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A12) located on top of chassis.

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

PACKARD-BELL MODELS 21103A, 21103A-U, 21202A, 21202A-U, 21401A, 21401A-U, (Ch. T-1A)

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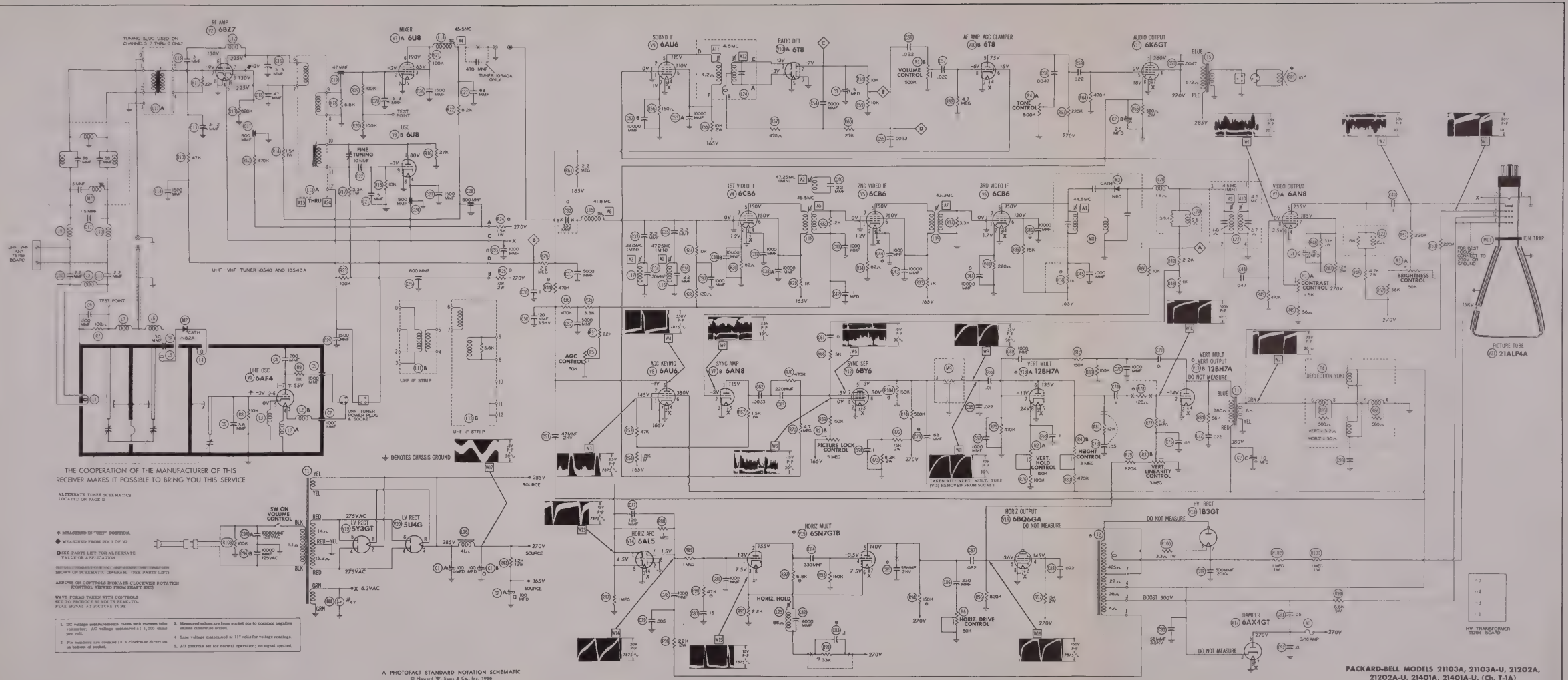
RF AMP V2 6BZ7
MIXER V1A 6U8
OSC V3B 6U8
SOUND IF V9 6AU6
RATIO DET V10A 6T8
AF AMP AGC CLAMPER V10B 6T8
AUDIO OUTPUT V11 6K6GT
1ST VIDEO IF V4 6CB6
2ND VIDEO IF V5 6CB6
3RD VIDEO IF V5 6CB6
VIDEO OUTPUT V7A 6AN8
SYNC AMP V7B 6AN8
AGC KEYING V6 6AU6
SYNC SEP V12 6BY6
VERT MULT V13A 12BH7A
VERT MULT & VERT OUTPUT V13B 12BH7A
DO NOT MEASURE
UHF OSC V1 6AF4
HORIZ AFC V14 6AL5
HORIZ MULT V15 6SN7GTB
HORIZ OUTPUT V13 6BQ6GA
DO NOT MEASURE
HV RECT V18 1B3GT
DO NOT MEASURE
LV RECT V19 5Y3GT
LV RECT V20 5U4G
DAMPER V17 6AX4GT
PICTURE TUBE V21 21ALP4A
PIN TRAP
DEFLECTION YOKE
VOLUME CONTROL 500K
TONE CONTROL 500K
CONTRAST CONTROL 270V 1.5M
BRIGHTNESS CONTROL 50K
AGC CONTROL 50K
PICTURE LOCK CONTROL 5 MEG
VERT. HOLD CONTROL 150K
HEIGHT CONTROL 3 MEG
VERT LINEARITY CONTROL 3 MEG
HORIZ. HOLD
HORIZ. DRIVE CONTROL 50K
SW ON VOLUME CONTROL
FINE TUNING
TEST POINT
UHF - VHF TUNER 10540 AND 10540A
UHF IF STRIP
UHF TUNER POWER PLUG & SOCKET
TUNER 10540A ONLY
TUNING SLUG USED ON CHANNELS 7 THRU 13 ONLY
TAKEN WITH VERT. MULT. TUBE (V13) REMOVED FROM SOCKET
DENOTES CHASSIS GROUND
285V SOURCE
270V SOURCE
165V SOURCE
275VAC
6.3VAC
BOOST 500V
HV TRANSFORMER TERM BOARD
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
ALTERNATE TUNER SCHEMATICS LOCATED ON PAGE 2
MEASURED IN "OFF" POSITION.
MEASURED FROM PIN 3 OF V2.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
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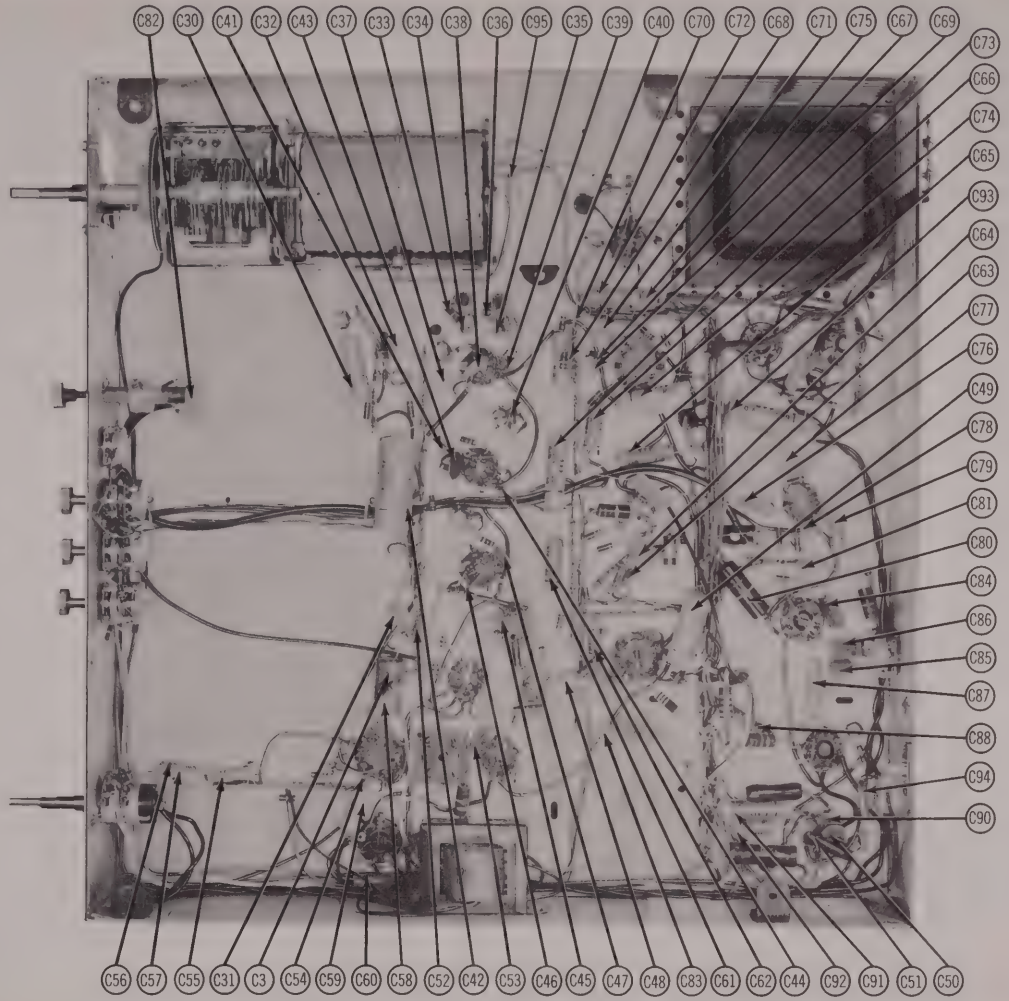
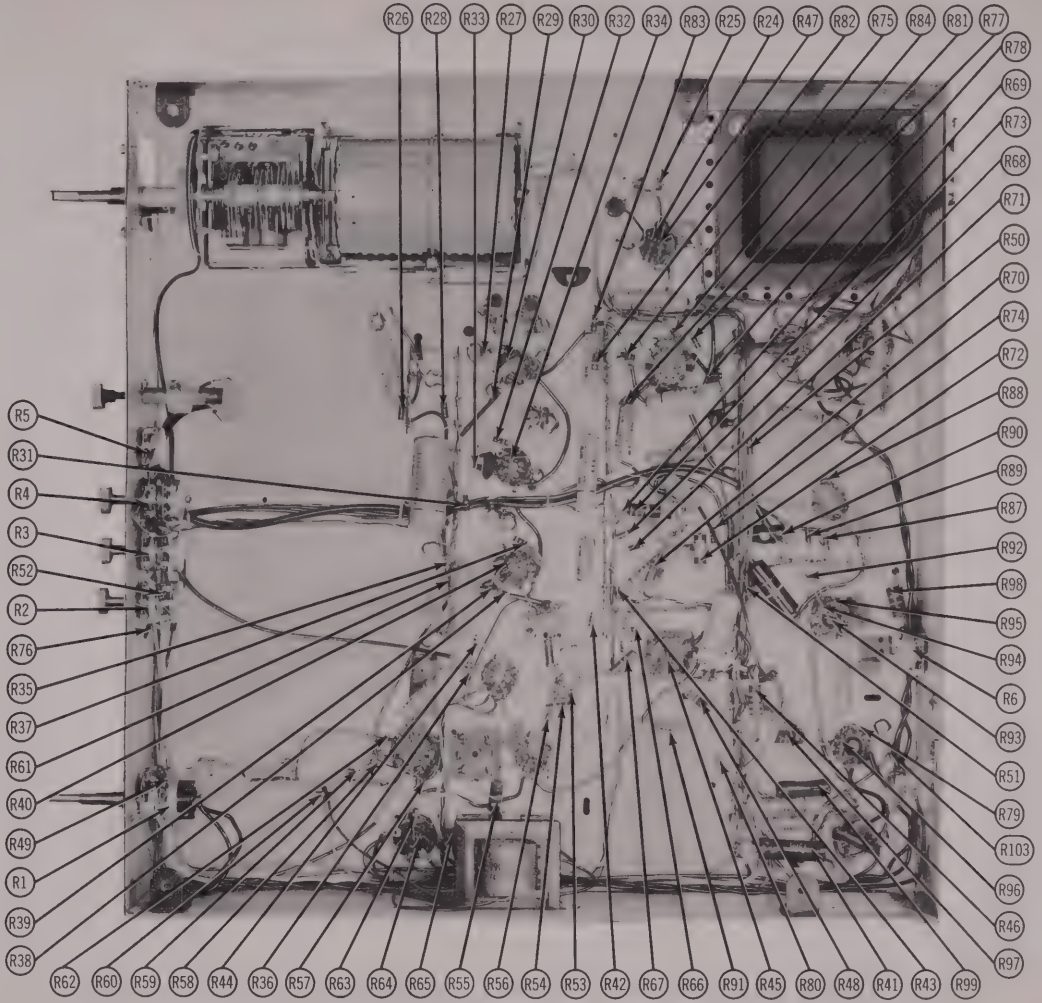
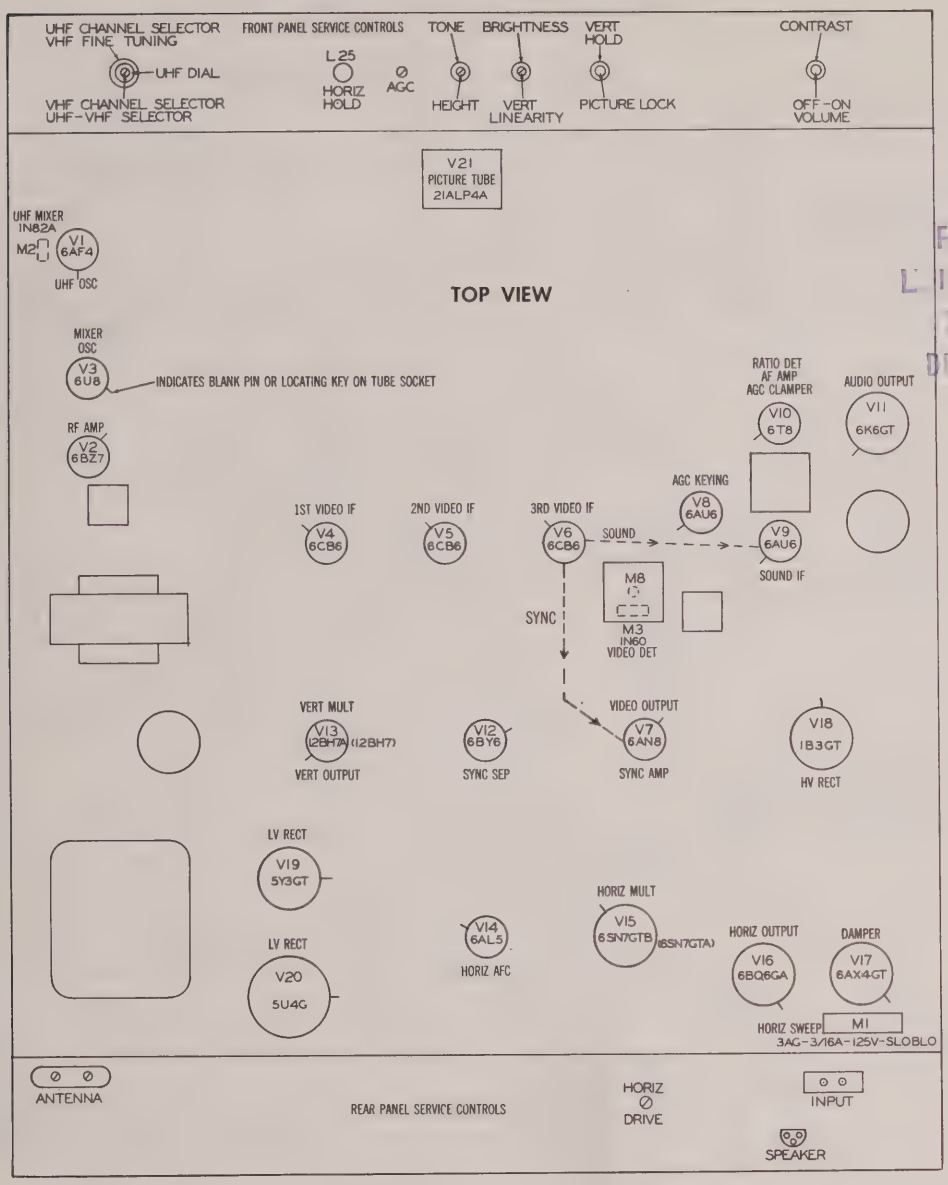


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V19, V20**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6 (V1 UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V7, V8, V21**
Has pic, no sound - **V9, V10, V11**
Overloaded picture - **V8, V10**

SYNC FAILURE
No vert. sync - **V12, V13**
No horiz. sync - **V12, V14, V15**
No vert. or horiz. sync - **V7, V12**

SWEEP FAILURE
No raster, has sound - **V15, V16, V17, V18, V21, Fuse (M1)**
No vertical deflection - **V13**
Poor vert. linearity or foldover - **V13**
Poor horiz. linearity or foldover - **V15, V16, V17**
Narrow picture - **V15, V16, V17, V18, V19, V20**
Vert. off freq. - **V12, V13**
Horiz. off freq. - **V12, V14, V15**

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from chassis. Do not remove the horizontal multivibrator tube (V13) to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded side of C14. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over osc.-mixer tube. Low side to chassis.	47.25MC (Unmod)	Between any two channels	DC probe to point Ⓐ. Common to chassis.	A1, A2	Increase signal generator output for usable reading on VTVM. Adjust for MINIMUM deflection on VTVM.
2.	"	"	39.75MC	"	"	A3	"
3.	"	"	45.5MC	"	"	A4, A5	Attenuate signal generator output for approximately 3 volts on VTVM. Adjust for maximum deflection.
4.	"	"	41.8MC	"	"	A6	"
5.	"	"	43.3MC	"	"	A7	"
6.	"	"	44.5MC	"	"	A8	"

OVERALL VIDEO IF RESPONSE CHECK

Couple a signal generator to an ungrounded tube shield floating over converter tube to provide markers on the response curve. Connect a 1 MFD 100 volt capacitor from point Ⓑ to chassis. Set AGC switch in normal position. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	63MC (10MC Swp)	39.75MC 41.25MC 43.3MC 45.0MC 45.75MC 47.25MC	3	Vert. Amp. thru 22KΩ to point Ⓐ. Low side to chassis.		Check for response curve similar to Fig.1. the 39.75MC and 47.25MC markers should be at MINIMUM response. To view these markers use high scope gain and increase sweep generator output. The 45.0MC marker should not exceed 97% and the 41.25MC marker should not exceed 12%. If necessary SLIGHTLY retouch A4 thru A8 for desired response.

4.5MC TRAP ALIGNMENT

Turn the contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru detector (Fig.2) to pin 11 (cathode) of picture tube. Common to chassis.	A9	Adjust for MINIMUM deflection.

ALTERNATE 4.5MC TRAP ALIGNMENT

Restore the set to normal operating condition and tune in a local TV station. Adjust A9 for MINIMUM 4.5 MC beat in picture.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓒ. Common to chassis.	A10, A11	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point Ⓓ. Common to point Ⓔ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

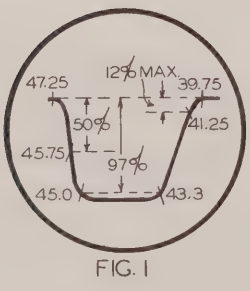


FIG. 1

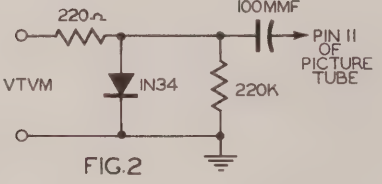


FIG.2

FIG.3

ALIGNMENT INSTRUCTIONS (cont)

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. Amp. to point (C). Low side to chassis.	A10, A11	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
10.	"	"	"	"	"	Vert. Amp. to point (D). Low side to chassis.	A12	Reconnect C3. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

VHF OSCILLATOR ALIGNMENT

The channel oscillator screws are reached thru a hole just above the fine tuning shaft. The correct VHF oscillator adjustment screw is accessible thru this hole as the channel switch is turned to each channel. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 22KΩ to point (A). Low side to chassis.	A13	Adjust to place video marker at 50% on response curve as in Fig. 5. Sound markers should not exceed 12%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A14	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A15	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A16	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A17	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A18	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A19	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A20	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A21	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A22	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A23	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A24	

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion is not recommended in the field.

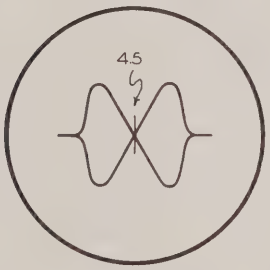


FIG.4

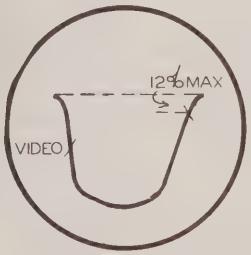
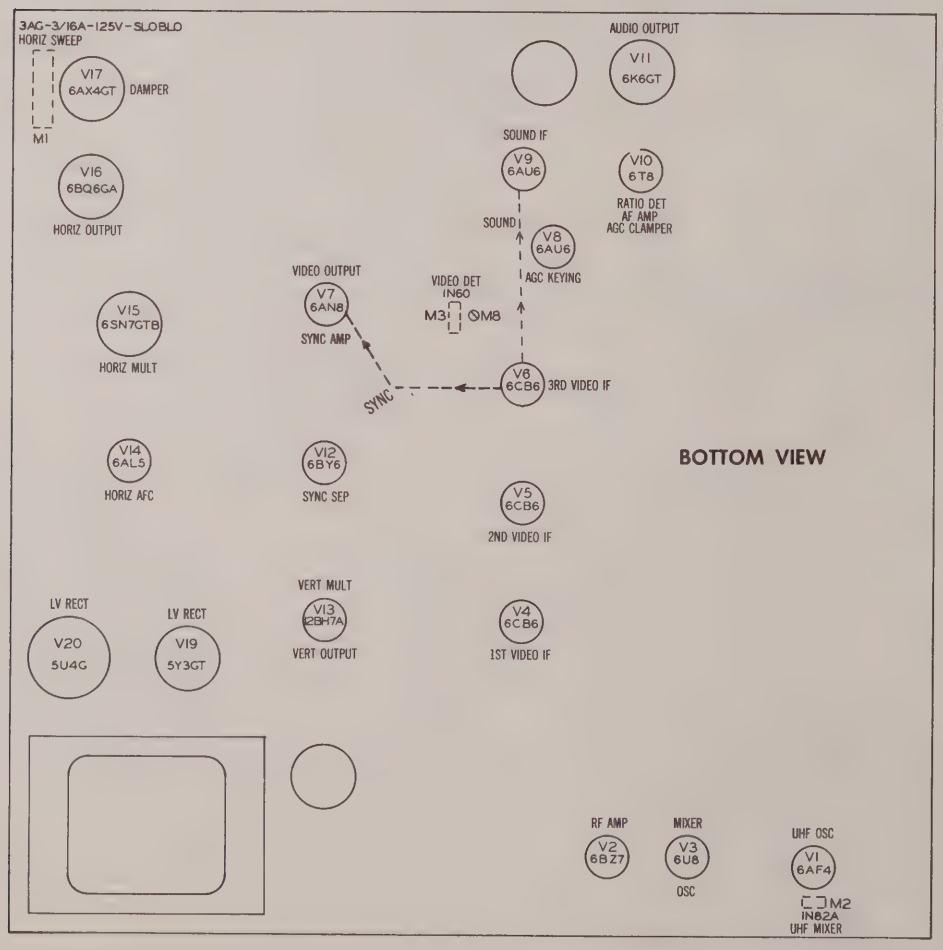


FIG.5

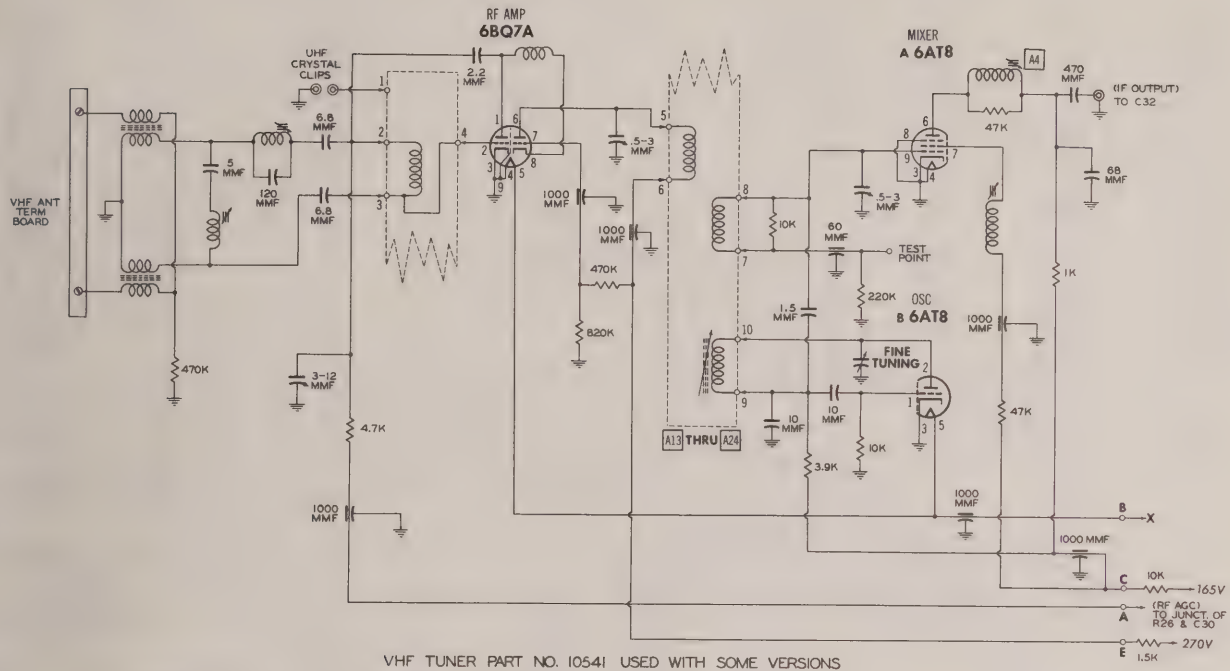
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	*† 15KΩ	10KΩ	.1Ω	0Ω	0Ω	10KΩ	*† 15KΩ		
V 2	6BZ7	† 3KΩ	350KΩ	INF	0Ω	.1Ω	INF	2.5Meg	0Ω	† 3KΩ
V 3	6U8	† 13KΩ	200KΩ	† 110KΩ	.1Ω	0Ω	† 10KΩ	0Ω	0Ω	10KΩ
V 4	6CB6	35KΩ	82Ω	0Ω	.1Ω	† 2.2KΩ	† 2.2KΩ	0Ω		
V 5	6CB6	25KΩ	82Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 6	6CB6	.1Ω	220Ω	0Ω	.1Ω	†2.2KΩ	†16KΩ	0Ω		
V 7	6AN8	†4KΩ	13KΩ	0Ω	0Ω	.1Ω	† 4.7KΩ	† 10KΩ	470KΩ	650Ω
V 8	6AU6	†50KΩ	† 1.2KΩ	0Ω	.1Ω	400KΩ	▲6.8KΩ	† 1.2KΩ		
V 9	6AU6	2.7Ω	0Ω	0Ω	.1Ω	† 11KΩ	† 11KΩ	150Ω		
V 10	6T8	INF	20KΩ	INF	.1Ω	0Ω	650KΩ	0Ω	4.7Meg	† 220KΩ
V 11	6K6GT	NC	0Ω	† 572Ω	† 41Ω	470KΩ	TP	.1Ω	560Ω	
V 12	6BY6	5Meg	0Ω	.1Ω	0Ω	† 560KΩ	† 10KΩ	4.7Meg		
V 13	12BH7A	▲ 7.5KΩ	2Meg	0Ω	.1Ω	.1Ω	▲ 1.6Meg	470KΩ	150KΩ	0Ω
V 14	6AL5	1Meg	0Ω	0Ω	.1Ω	1Meg	0Ω	2Meg		
V 15	6SN7GTB	3Meg	† 40KΩ	2.2KΩ	150KΩ	† 150KΩ	2.2KΩ	.1Ω	0Ω	
V 16	6BQ6GA	NC	.1Ω	TP	†15KΩ	820KΩ	NC	0Ω	0Ω	TOP CAP ▲ 22Ω
V 17	6AX4GT	TP	TP	160KΩ	NC	† 50Ω	TP	.1Ω	0Ω	
V 18	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲ 447Ω
V 19	5Y3GT	NC	10KΩ	NC	15Ω	NC	14Ω	NC	10KΩ	
V 20	5U4G	NC	10KΩ	NC	15Ω	NC	14Ω	NC	10KΩ	
V 21	21ALP4A	0Ω	220KΩ	PIN 6 ▲ 6.8KΩ	PIN 10 ▲ 6.8KΩ	PIN 11 † 300KΩ	PIN 12 .1Ω			

* MEASURED IN "UHF" POSITION.
† MEASURED FROM PIN 2 OF V19.
▲ MEASURED FROM PIN 3 OF V17.
TP-TIE POINT.
NC-NO CONNECTION.



TUBE PLACEMENT CHART



VHF TUNER PART NO. 10541 USED WITH SOME VERSIONS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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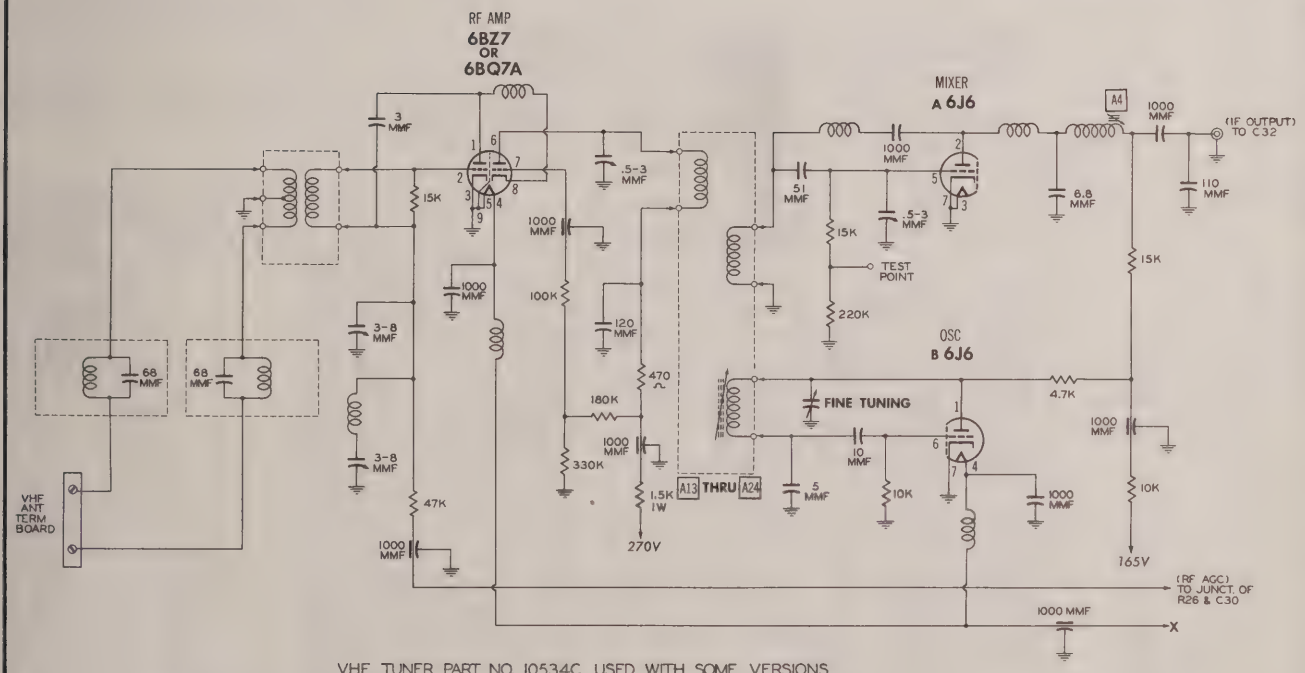
ALTERNATE VHF TUNER SCHEMATIC



VHF TUNER PART NO. 10534C USED WITH SOME VERSIONS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTERNATE VHF TUNER SCHEMATIC

SET 307 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	STANDARD REPLACEMENT	REMA BASE TYPE	NOTES
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2	RF Amplifier	6BZ7	6BZ7	9AJ	
V3	Osc.-Mixer	6U8	6U8	9AE	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output-Sync Amplifier	6AV8	6AN8	9DA	
V8	AGC Keying	6AU8	6AU8	7BK	
V9	Sound IF Amp.	6AU8	6AU8	7BK	
V10	Ratio Detector-AF Amp.-AGC Clamper	6T8	6T8	9N	
V11	Audio Output	6BQ7	6BQ7	9U	
V12	Sync Separator	6BT8	6BT8	7CR	
V13	Vert. Multi.- Vert. Output	13BH7A	13BH7A	9A	13BH7 may be used as an alternate
V14	Horiz. AFC	6AL8	6AL8	9BT	
V15	Horiz. Multi.	6BN7GTB	6BN7GTB	9BD	6BN7GTA may be used as an alternate
V16	Horiz. Output	6BQ8GA	6BQ8GA	9AM	
V17	Damper	6AX4GT	6AX4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	8C	
V19	LV Rectifier	5Y3GT	5Y3GT	8T	
V20	LV Rectifier	6U4G	6U4G	8T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Packard-Bell PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	REMA BASE TYPE	NOTES
V21	21ALP4A ①	21ALP4A ① 21ALP4B ②	21ALP4A ①	21ALP4A ② 21ALP4B ③ ④	21ALP4A ①	12L	① Aluminized ② Silver screen
		21ALP4		21ALP4	21ALP4	12L	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	TYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲100	350	24089			FP332.4	TM-3128		Q-012 FM-3512
B	▲100	350							
C	▲10	350							
C2A	●100	350	24087A	AFB4-120	DO7S	FP389.1	TM-3129		D-390 MT-0225
B	▲25	25							
C	▲10	450							
C3	5	50	24038	PRS150V-4	HR550	TC30	TD-5-50	MMT-0505	TVA-1303

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	IRC PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	390									
C5	1000									
C6	3.8									
C7	1000									
C8	30									
C9	1500			BPD-0015	DD-152	K07I	801-0015	DC-5315	59K-D15	
C10	3.3			NP0-S13.3	TCZ-3R3	Z006	NP0A-3R3		5TCCB-V22	
C11	3.3			NP0-S13.3	TCZ-3R3	Z006	NP0A-3R3		5TCCB-V22	
C12	1.5			NP0-S1.5	TCZ-1R5	Z004	NP0A-1R5	ZT-5515	5TCCB-V15	
C13	3-13									
C14	1500			BPD-0015	DD-152	K07I	801-0015	DC-5315	59K-D15	
C15	3			NP0-D33	TCZ-3R3	Z007	NP0A-030	ZT-553	5TCCB-V33	
C16	.5-3				839-3		3115-01-0R5	CT565A		
C17	820									
C18	47		BPD-000047	DD-470	G083		531-470	UC-5447	5GA-Q47	
C19	47			MPT-50						
C20	.5-3			839-5			3115-01-0R5	CT565A		
C21	5									
C22	10		N750-D10	TCN-10	N018		N750A-100	NT-541	5TCU-Q1	
C23	1500		BPD-0015	DD-152	K07I		801-0015	DC-5315	59K-D15	
C24	800									
C25	800									
C26	1500		BPD-0015	DD-152	K07I		801-0015	DC-5315	59K-D15	
C27	68		N750-D68	TCN-68	N045		N750L-680		5TCU-Q68	
C28	800									
C29	1500		BPD-0015	DD-152	K07I		801-0015	DC-5315	59K-D15	
C30	.1	300	P2SR8-1	BP-104	CUBBP1			P7401	3TM-P1	
C31	5000		BPD-005	DD-502	K080		811-005	DC-525	59K-D5	
C32	330		BPD-0033	TCZ-331	G056		531-331	UC-5333	5GA-Y33	Note 1
C33	3.3		NP0-S13.3	TCZ-3R3	Z006		NP0A-3R3		5TCCB-V33	
C34	30	500	NP0-S130	TCZ-30	SR5Q8		NP0L-300		MS-43	
C35	3.3		NP0-S13.3	TCZ-3R3	Z006		NP0A-3R3		5TCCB-V22	
C36	33	500	NP0-S33	TCZ-33	SR5Q33		NP0E-330		MS-422	
C37	1000		BPD-001	DD-102	K069		801-001	DC-521	59K-D1	
C38A	10000		BPD-X001	DD-103	DK083		811-01	DC-511	59K-S81	
B	10000						811-01	DC-511		
C39	1000		BPD-001	DD-102	K069		801-001	DC-521	59K-D1	
C40	82		NP0-S133	TCZ-33	TZ14		NP0E-220	DC-531	5TCC-Q22	
C41	1000		BPD-001	DD-102	K069		801-001	DC-521	59K-D1	
C42	1.9	100	P2SR8-1.9		CUBZW1			P741	3TM-MG	
C43	10000		BPD-01	DD-103	K082		811-01	DC-511	59K-S1	
C44	1000		BPD-001	DD-102	K069		801-001	DC-521	59K-D1	Note 3
C45	1000		BPD-001	DD-102	K069		801-001	DC-521	59K-D1	
C46	10000		BPD-01	DD-103	K082		811-01	DC-511	59K-S1	Note 3
C47	10000		BPD-01	DD-103	K082		811-01	DC-511	59K-S1	Note 3
C48	.047	300	BPD-05	DP-503	CUBB247			P7407	3TM-S47	
C49	1000	500	P2SR8-1	DP-102	CUBAP1			P7401	3TM-P1	
C50	150	1500	1N998	DD60-121						
C51	47	3000	29966	HVD-30-47	DD30-470	V3Q47	3KV-470	DC-30447	20GA-Q47	
C52	5000		BPD-005	DD-502	K080		811-005	DC-525	59K-D5	
C53A	10000		BPD-X001	DD8-103	DK083		811-01	DC-511	59K-S81	
B	10000						811-01	DC-511		
C54	5000		BPD-005	DD-502	K080		811-005	DC-525	59K-D5	
C55	.0033	600	33156	BD-332	CUBBD33		GP3-333-332	PT7233	5TM-D33	
C56	.033	600	33133	BPD-03	DP-303		817-03	PT7423	5TM-S23	
C57	.022	600	33132	BPD-02	DP-203		CUBB232	817-02	PT7422	5TM-S22
C58	.0047	600	33127	S14700	DP-472		CUBBD47	GP3-333-472	PT7247	5TM-D47
C59	.022	600	33141	BPD-02	DP-203		CUBB232	817-02	PT7422	5TM-S22
C60	.0047	600	33137	S14700	DP-472		CUBBD47	GP3-333-472	PT7247	5TM-D47

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	IRC PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	.01	400	33023	BPD-01	DS-103	CUBAB1	GP3-333-103	PT7411	4TM-S1	
C62	.0033	400	33117	BPD-0033	DS-332	CUBBD33	GP3-333-332	PT7333	5TM-D33	
C63	220		33115	BPD-0022	DD-221	G091	531-331	UC-5323	5GA-T23	
C64	.1	300	33107	P2SR8-1	BP-104	CUBP1		P7401	3TM-P1	
C65	.022	600	33141	BPD-02	DP-203	CUBB232	817-02	PT7422	5TM-S22	
C66	.01	600	33139	BPD-01	DS-103	CUBB1	GP3-333-103	PT7411	5TM-S1	
C67	1000		33965	BPD-001	DD-102	K069	801-001	DC-521	59K-D1	
C68	.1	300	33107	P2SR8-1	BP-104	CUBP1		P7401	3TM-P1	
C69	1000		33965	BPD-001	DD-102	K069	801-001	DC-521	59K-D1	
C70	1000		33965	BPD-001	DD-102	K069	801-001	DC-521	59K-D1	
C71	.01	600	33139	BPD-01	DS-103	CUBB1	GP3-333-103	PT7411	5TM-S1	
C72	.033	600	33141	BPD-03	DP-303	CUBB232	817-03	PT7423	5TM-S23	
C73	.05	600	33143	BPD-05	DP-503	CUBB85		PT7415	5TM-S5	
C74	.1	300	33143	P2SR8-1	BP-104	CUBP1		P7401	3TM-P1	
C75	.05	600	33143	BPD-05	DP-503	CUBB85		PT7415	5TM-S5	
C76	330	500	TC2-331	29993		Z039			5TCC-Q33	Note 4
C77	180	500	BPD-0180	TCZ-180		T233	MP0-333-181		5TCC-T12	
C78	1000		33965	BPD-001	DD-102	K069	801-001	DC-521	59K-D1	
C79	1000	500	33050	29993		Z039		MC3648	MS-35	
C80	.15	300	33708	P2SR8-15		CUBSP15		P7405	3TM-P15	
C81	1000		33965	BPD-001	DD-102	K069	801-001	DC-521	59K-D1	
C82	1000	500	33038	1664-004		1K104		MC3648	MS-34	
C83	.1	300	33107	P2SR8-1	BP-104	CUBP1		P7401	3TM-P1	Note 5
C84	330	500	33231	1665-00033	D6-331	SR1T33	531-331		MS-333	Note 5
C85	56	3000	33994							
C86	330	500	33231	1665-00033		SR1T33			MS-333	
C87	.022	600	33141	BPD-02	DP-203	CUBB232	817-02	PT7122	5TM-S22	
C88	.022	600	33141	BPD-02	DP-203	CUBB232	817-02	PT7122	5TM-S22	
C89	500	20000	33949	UV-508	TV3-503	MMU507S	413	RVS20S5A	MOX-75	
C90	56	3500	33977		DD60-560					
C91	.05	600	33010	BPD-05	DP-503	CUBB85		PT7415	5TM-S5	
C92	.01	600	33139	BPD-01	DS-103	CUBB1	GP3-333-103	PT7411	5TM-S1	
C93	.1	300	33145	P2SR8-1	BP-104	CUBP1		P7401	3TM-P1	
C94A	10000	(25VAC)	33983A		DD-103					
B	10000	(25VAC)			DD-103					
C95	1000		33965	BPD-001	DD-102	K069	801-001	DC-521	59K-D1	Note 2

Note 1. Used only with UHF-VHF tuner 10540.
Note 2. Used only with UHF versions.
Note 3. C48 and C47 become a dual 10000MMF unit on VHF only versions (part #23962).
Note 4. C85 is 1200MMF in chassis stamped 745 or lower.
Note 5. Not used in chassis stamped 785 or lower.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω		25877B	F1-7		GJ-869 *	UF152A	Contrast (Panel)
B	500KΩ			R2-41			UR55A	Volume (Rear)
C	Switch			KB-1			US-28	Attach to R1B.
R2A	150KΩ		25860A	F1-23		GJ-795 *	UE152A	Vertical Hold (Panel)
B	5Meg			R2-83				Picture Lock (Rear)
R3A	50KΩ		25875A	F1-29		GJ-733 †	UE1047	Brightness (Panel)
B	1Meg			R2-78				Vertical Linearity (Rear)
R4A	500KΩ		25876A	F1-41		GJ-733 **	UF55A †† UR54L ‡	Tone (Panel)
B	1Meg			R2-78				Height (Rear)
R5A	50KΩ	1	25873	AB-31	A47-50K-S	QJ-123	U-35	AGC
B	Shaft		Not Req.	AK-1	FKS-1/4	Not Req.	Not Req.	Attach to R5A.
R6A	50KΩ	1	25871	AB-31	A47-50K-S	QJ-123	U-35	Horizontal Drive
B	Shaft		Not Req.	AK-1	FKS-1/4	Not Req.	Not Req.	Attach to R6A.

* Concentrikit Equivalent, K-2 Kit, Base Elements and Shafts; B11-129, P11-102 (Panel) B11-161, R15-025 (Rear)
† Concentrikit Equivalent, K-5 Kit, Base Elements and Shafts; B11-123, P8-101 (Panel) B11-140, R15-028 (Rear)
** Concentrikit Equivalent, K-5 Kit, Base Elements and Shafts; B13-133, P8-101 (Panel) B11-140, R15-028 (Rear)
†† Universal Replacement (Mallory Exact Duplicate Part No. UE1485.
‡ Concentrikit Equivalent, K-7 Kit, Base Elements and Shafts; B17-109, P17-112 (Panel) B13-133, R17-303 (Rear)
T6-1 (Switch)

RESISTORS

ITEM No.	RATING: OHMS	WATTS	REPLACEMENT DATA: Packard-Bell PART No.	IRC PART No.	NOTES
R7	100Ω			BTS-100	
R8	680Ω			BTS-680	
R9	1000Ω			BTS-1000	
R10	47KΩ			BTS-47K	
R11	22KΩ			BTS-22K	
R12	470KΩ			BTS-470K	
R13	820KΩ			BTS-820K	
R14	1500Ω			BTA-1500	
R15	10KΩ				
R16	27KΩ				
R17	3300Ω				
R18	6800Ω				
R19	100KΩ				
R20	100KΩ				
R21	100KΩ				
R22	82000Ω				
R23	100KΩ			BTS-100K	
R24	150KΩ			BTA-1500	Note 1
R25	10KΩ	2		BTB-10K	Note 1
R26	2.2Meg		73165	BTS-2.2Meg	
R27	10KΩ		73037	BTS-10K	
R28	330Ω		73014	BTS-120	
R29	10000Ω		73025	BTS-1000	
R30	82Ω		73012	BTS-82	
R31	22KΩ		73041	BTS-22K	
R32	12KΩ		73038		
R33	1000Ω		73025	BTS-1000	
R34	33Ω		73013	BTS-82	
R35	3300Ω		73031	BTS-3300	
R36	470K		73037	BTS-470K	
R37	3300Ω		73031		
R38	1000Ω		73025	BTS-1000	Note 2
R39	33KΩ		73039	BTS-15K	
R40	220Ω		73017	BTS-220	
R41	3300Ω	12	73034	2D-3300	
R42	2200Ω		73033	BTS-2200	
R43	1000Ω		73025	BTS-1000	
R44	470KΩ		73037	BTS-470K	Note 3

RESISTORS (cont)

ITEM No.	RATING: OHMS	WATTS	REPLACEMENT DATA: Packard-Bell PART No.	IRC PART No.	NOTES
R45	470KΩ		73037	BTS-470K	
R46	470Ω		73038	BTB-470	
R47	12KΩ		73038	BTB-12K	
R48	33KΩ		73043	BTA-33K	
R49	56Ω		73010	BTS-56	
R50	220KΩ		73153	BTS-220K	
R51	220KΩ		73153	BTS-220K	
R52	56KΩ		73046	BTS-56K	
R53	47KΩ 5%		73045	BTS-47K 5%	
R54	12000Ω		73226	BTA-1200	
R55	50KΩ	2	73437	BTH-10K	
R56	150Ω		73015	BTS-150	
R57	470Ω		73021	BTS-470	
R58	50KΩ		73037	BTS-50K	
R59	10KΩ		73037	BTB-10K	
R60	27KΩ		73042	BTB-27K	
R61	2.5Meg		73165	BTS-2.5Meg	
R62	4.7Meg		73169	BTS-4.7Meg	
R63	220KΩ		73153	BTS-220K	
R64	470KΩ		73157	BTS-470K	
R65	560Ω	2	73422	BTB-560	
R66	10KΩ	1	73037	BTS-10K	
R67	3500Ω		73227	BTA-1500	
R68	15KΩ		73039	BTS-15K	
R69	150KΩ		73051	BTS-150K	
R70	470KΩ		73157	BTS-470K	
R71	4.7Meg		73169	BTS-4.7Meg	
R72	15KΩ	3	73439	BTB-15K	
R73	82000Ω	2	73438	BTB-8200	
R74	560KΩ		73056	BTS-560K	
R75	470KΩ		73157	BTS-470K	
R76	200KΩ		73149	BTS-200K	
R77	5.2Meg		73063	BTS-4.2Meg	
R78	120Ω		73014	BTS-120	Note 4
R79	820KΩ		73060	BTS-820K	
R80	470KΩ		73157	BTS-470K	
R81	33KΩ		73039	BTS-15K	
R82	150KΩ	2	73051	BTS-150K	

RESISTORS (cont)

ITEM No.	RATING: OHMS	WATTS	REPLACEMENT DATA: Packard-Bell PART No.	IRC PART No.	NOTES
R83	100KΩ		73049	BTS-100K	
R84	56KΩ		73046	BTS-56K	
R85	56Ω		73022		
R86	560Ω		73022		
R87	1Meg		73061		
R88	1Meg		73061		
R89	1Meg		73061		
R90	47KΩ		73045	BTS-47K	Note 5
R91	33KΩ		73043		Note 2
R92	68000Ω		73035		Note 2
R93	150KΩ		73051		
R94	150KΩ		73051		Note 6
R95	22000Ω		73039		
R96	820KΩ		73080		
R97	15KΩ	2	73439		
R98	22KΩ	2	73441		
R99	6800Ω	5	73653		
R100	3.3Ω		73261		
R101	1Meg		73398	BTA-1Meg	
R102	1Meg		73398	BTA-1Meg	
R103	330KΩ		73149	BTS-150K	
R104	150KΩ		73051	BTS-150K	Note 8

Note L. Use with heat dissipating band. If bands are not used, the wattage rating must be doubled.
Note 1. Not used in some versions
Note 2. Some versions use a 220KΩ ½W resistor in this application.
Note 3. Not used in chassis stamped below 745.
Note 4. Not used in chassis stamped below 745 use a 27KΩ ½W resistor in this application.
Note 5. Chassis stamped below 755 use a 10KΩ ½W resistor in this application.
Note 6. Chassis stamped below 755 use a 100KΩ ½W resistor in this application.
Note 8. Used in chassis stamped below 745.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	540VCT	5VAC	6.3VAC	29045			P-8759 ⅄		R-83C ⅄
	⅄1.7A	.240ADC ⅄	2A	3A				P-8332	26R00 ⅄	

① Mount transformer top side.
② Taps 6.3V ③ 4.5A winding.
③ Parallel and phase 5.3V ④ 7.1A and L 2A for secondary # 3, tape 6.3V ⑤ .9A winding.
④ Parallel and phase 3 - 6.3V windings for secondary # 3, tape 5V ⑥ 3A and 6.3V ⑤ 3A winding.
⑤ Parallel and phase 6.3V ⑤ 4A winding for secondary # 3 tape 6.3V ⑤ 1.3A winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: Packard-Bell PART No	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	29457	FB41 *	HVO-9 *	230T1 *	X080*	A-8285 *	FLY-24 *	D-27 *
		29460A ⅃							
T3	Vert. Output Trans.	29458D	Z1000 ②	A-3080 ②		V306 ③	A-8140 ③	26S56 ②	A-103X
T4A	Yoke(90°)Horiz. (19KC)	23583A							
	Vert.(2.6MC)	29404A ⅃							

I. Alternate horiz. output trans.
2 Use 50 to 1 turns ratio.
3 Drill new mounting hole(s).
4 Yoke rear cover & centering device.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC	REPLACEMENT DATA: Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	7KΩ	3.2Ω	29428	Z1112 ②	A-3020 ②	A-3849 ③	26S48 ②	S-9X	① Alternate Part No. ② Tape 150 & 8Ω secondary taps. ③ Drill new mtg. holes.
			29428A ⅃						

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V C IMP	REPLACEMENT DATA: Packard-Bell PART No	QUAM PART No	NOTES
SP1	10"	PM	3.3Ω	83705B ⅄	10A31	① Used in Models 21103A, 21103A-U
	6"	PM	3.3Ω	83305 ②	6A21	② Used in Models 21202A, 21202A-U,21401A, 21401A-U

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI	DC RES. SEC	REPLACEMENT DATA: Packard-Bell PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Ant. Coil	0Ω						
L2A	Fil. Choke	0Ω						
B	Fil. Choke	0Ω						
L3	Cathode Choke	0Ω						
L4	VHF Osc. Coupling Coil	0Ω						
L5	UHF IF Coil	0Ω						
L6	UHF IF Coil	0Ω						
L7	UHF IF Coil	0Ω						
L8	UHF Ant. Coil	0Ω						
L9	VHF Ant. Coupling	0Ω						
L10	VHF Ant. Coupling	0Ω						
L11A	VHF Ant. Coils	0GCT	0Ω					
B	UHF IF Coil	0Ω						
L12	Neut. Coil	0Ω						
L13A	VHF RF Mixer Grid Osc. Coils	0Ω						
B	UHF IF Coils	0Ω						Includes 5.6KΩ resistor
L14	Conv. Plate	.1Ω						
L15	1st Video IF	.1Ω		29559A	20-1045 *	TV-131	8235	
L16	2d. 75MC Trap	.1Ω		[redacted]	20-1046		8235	
L17	47.25MC Trap	.1Ω		29564A	20-1047	TV-153	6325	
L18	2nd Video IF	.1Ω	.1Ω	[redacted]				Includes 47.25MC Trap
L19	3rd Video IF	.1Ω	.1Ω	[redacted]				

PACKARD-BELL MODELS 21103A, 21103A-U, 21202A 21202A-U, 21401A, 21401A-U (Ch. T-1A)

L. F. BLANKENSHIP
524 MEADE ST.
DURANGO, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Packard-Bell PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L20	Series Peaking Coil	1.8Ω		29566	19-1005		4612	10 Microhenries
L21	Shunt Peaking Coil	9.5Ω		29508	19-4180	TV-183	6179	180 Microhenries, Wound on 39KΩ resistor
L22A B	4.5MC Trap Sound IF	1.8Ω 2.7Ω		29563				
L23	Shunt Peaking Coil	15Ω		29577	19-4400 ■		6136 ■	400 Microhenries, wound on 18KΩ resistor
L24	Ratio Det.	4.2Ω	.3ΩCT	29054	17-3493	TV-113 ▲	1498	Tertiary winding=.7Ω

* Use one winding only.
■ Parallel with 18KΩ resistor.
▲ Use adaptor plate.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Packard-Bell PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	NOTES
L25	86Ω		29582A	19-1576	TV-163	6210			HS-5	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L26	.290ADC	41Ω	1.6HY	27005	C5037 ①	C-2996	C-2326 ①	26C44 ①	C-17X

① Drill one new mounting hole.

FUSES

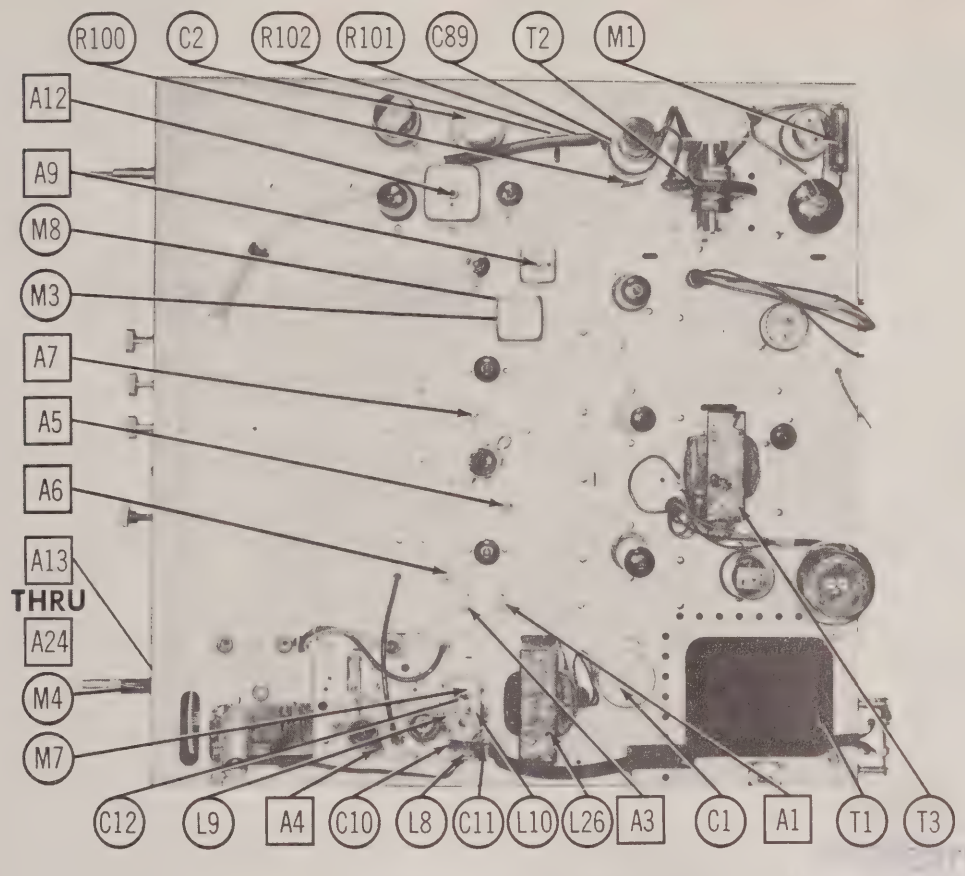
ITEM No.	TYPE	RATING	REPLACEMENT DATA Packard-Bell PART No. FUSE	Packard-Bell PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	3/16A 125V	45006		313.187 (3AG S/B 3/16A)	357001	MDL 3/16	4405

CRYSTAL DIODES

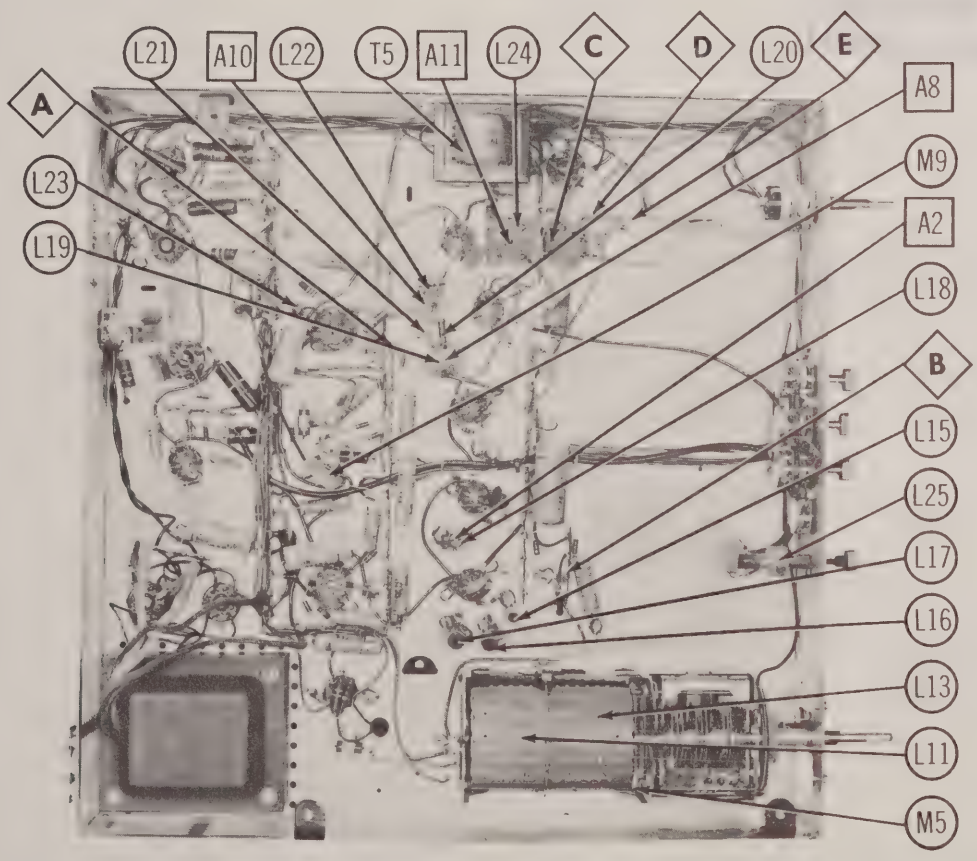
ITEM No.	ORIG. TYPE	REPLACEMENT DATA Packard-Bell PART No.	REPLACEMENT DATA SYLVANIA PART No.	NOTES
M2	1N82A		1N82A	UHF Mixer
M3	1N60		1N60	Video Det.

MISCELLANEOUS

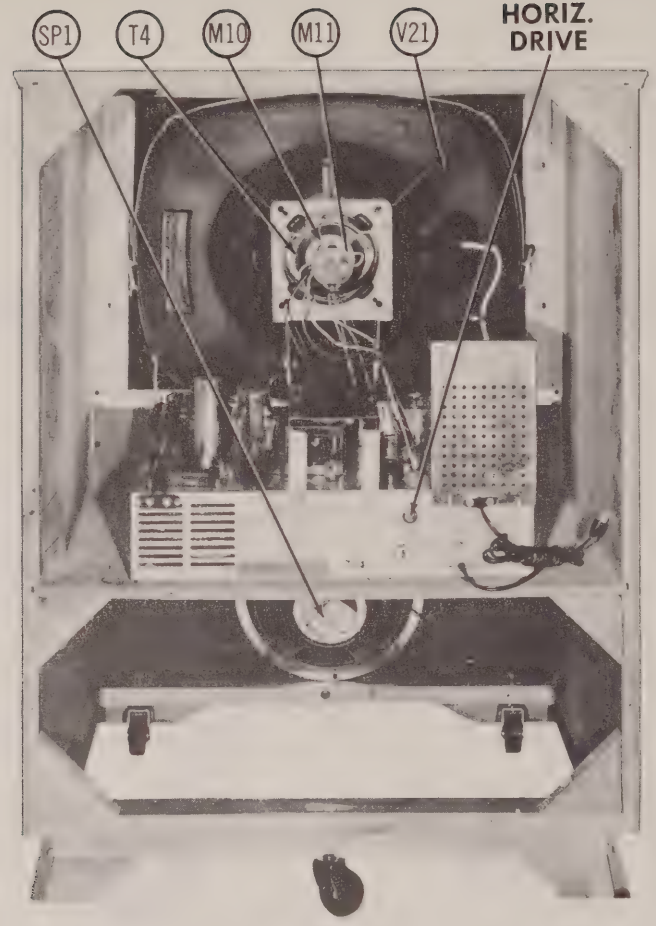
ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M4	Dial Light	54002	#47
M5	Tuner	10540	VHF-UHF-Models 21103A-U, 21202A-U, 21401A-U; Not used in some versions
	Tuner	10540A	VHF-UHF-Models 21103A-U, 21202A-U, 21401A-U; Not used in some versions
M6	Tuner	10541	VHF-Models 21103A, 21202A, 21401A; Not used in some versions.
	Tuner	10534C	VHF-Models 21103A, 21202A, 21401A; Not used in some versions.
M7	Trap		VHF Ant. Input Filter-Models 21103A-U, 21202A-U, 21401A-U only.
M8	Video Det. Assy.	29573A	Includes M3, Coils, & Capacitors
M9	Integrator	23980	Vertical Network-Centralab Part No. PC-104
M10	Centering Device	34045A	Includes Deflection Yoke (T4) Rear Cover
M11	Ion Trap	28120	
	Cabinet		Specify Model No. & Finish.
	Knob	52120	Brightness or vertical Hold
	Knob	52120-AE	Tone (Yellow)
	Knob	52121	Horiz. Hold
	Knob	52126A	VHF Channel Selector-Designate Color-Models 21103A, 21202A, 21401A
	Knob	52140	VHF Fine Tuning-Designate Color-Models 21103A, 21202A, 21401A
	Knob	52127A	On-off-volume-Designate color-Models 21103A, 21202A, 21401A
	Knob	52141	Contrast-Designate Color-Models 21103A, 21202A, 21401A
	Knob	52134A	Contrast-Designate Color-Models 21103A-U, 21202A-U, 21401A-U
	Knob	52135	Fine Tuning-Designate Color-Models 21103A-U, 21202A-U, 21401A-U
	Knob	52136B	On-off-volume-Designate Color-Models 21103A-U, 21202A-U, 21401A-U
	Knob	55137	VHF Tuning-Designate Color-Models 21103A-U, 21202A-U, 21401A-U
	Knob	52138	UHF Tuning-Designate Color-Models 21103A-U, 21202A-U, 21401A-U



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENT.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

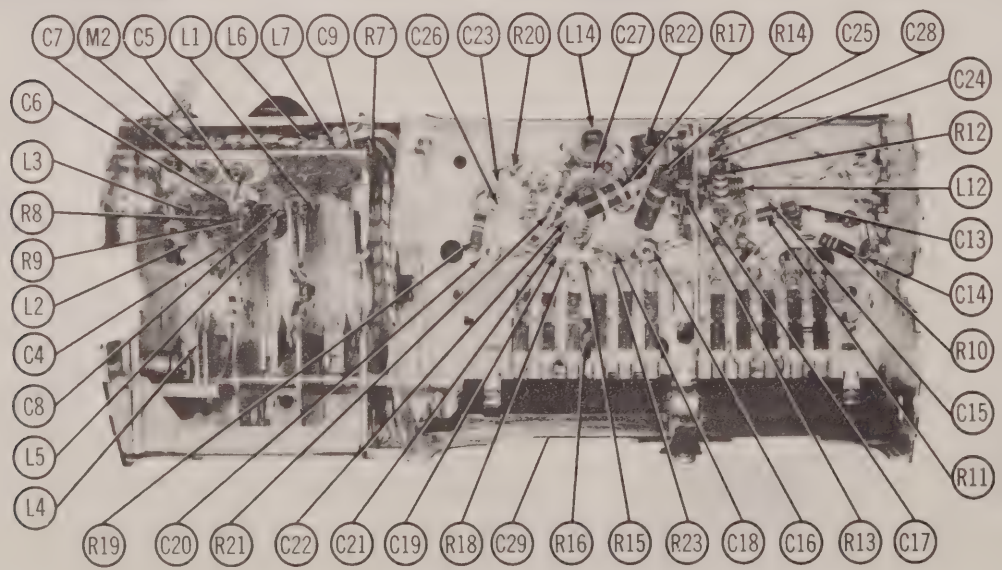
Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold slug (labeled "Horizontal Hold" on front panel) until picture synchronizes horizontally.

Momentarily remove the signal by switching off channel and back again.

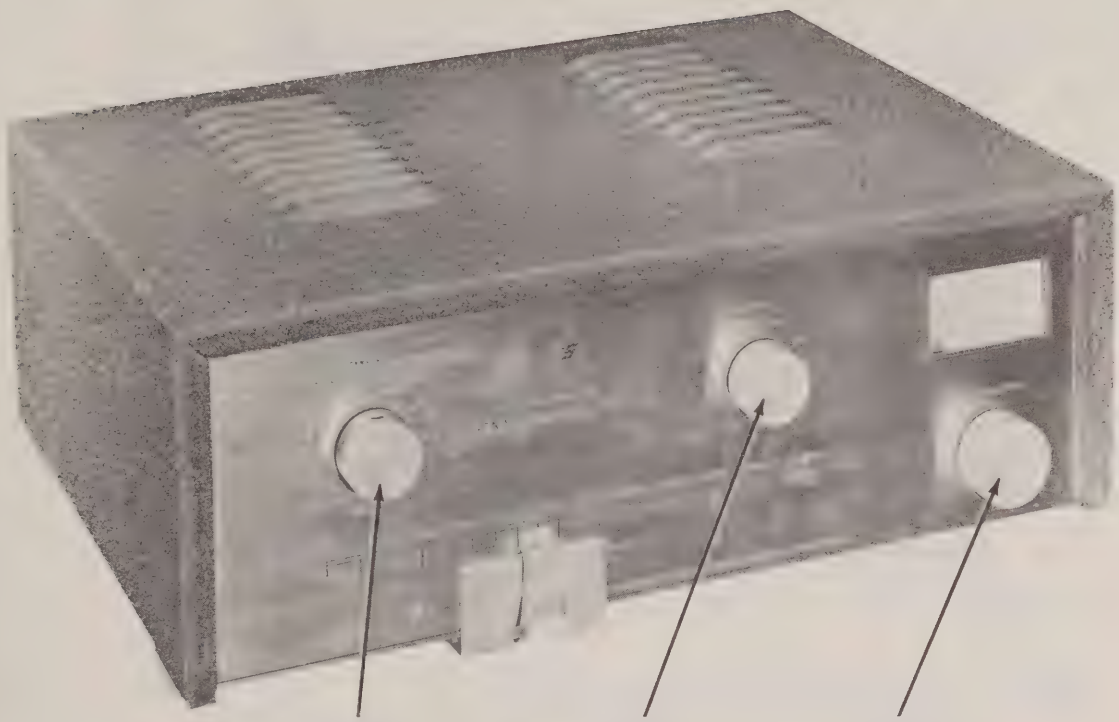
If necessary, slightly retouch the horizontal hold slug for best lock in action.

Adjust the horizontal drive control (R6) in a clockwise direction as far as possible without the presence of vertical white lines or compression near the center of the picture.



RF TUNER BOTTOM VIEW

H. H. SCOTT
MODEL 310-A



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST
DENVER COLO

H. H. SCOTT
MODEL 310-A

TRADE NAME	H.H. Scott Model 310-A
MANUFACTURER	Hermon Hosmer Scott, Inc., 385 Putnam Ave., Cambridge 39, Mass.
TYPE SET	AC Operated FM Superheterodyne Tuner For Custom Installation
TUBES (Ten)	Types 6BQ7A (or) 6BK7A RF Amp., 6U8 Mixer-Osc., 6AU6 lst.IF Amp., 6AU6 2nd. IF Amp., 6AU6 3rd. IF Amp., 6BN6 lst. Limiter, 6AU6 2nd. Limiter, 12AU7A Squelch-AF Amp., 12AU7A AF Amp.-Squelch Diode, 6X5GT Rectifier
POWER SUPPLY	105-125 Volts AC- 50-60 Cycles RATING .44 Amp. @ 117 Volts AC
TUNING RANGE	FM - 87MC-109MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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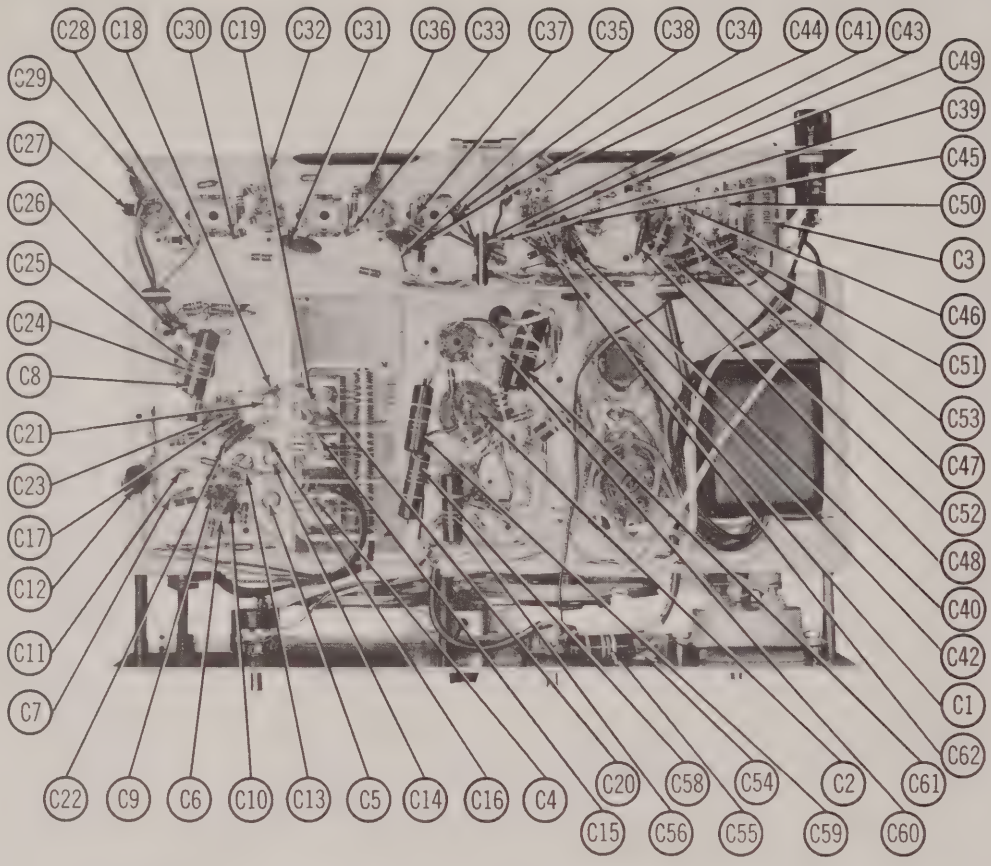
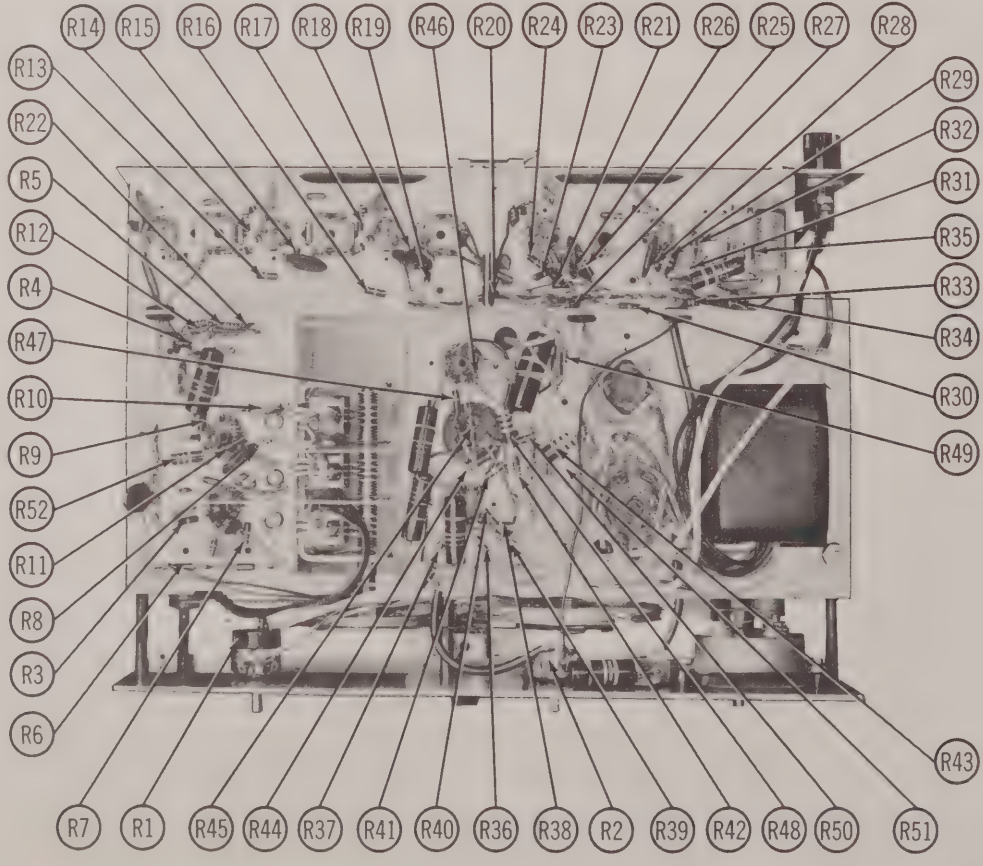
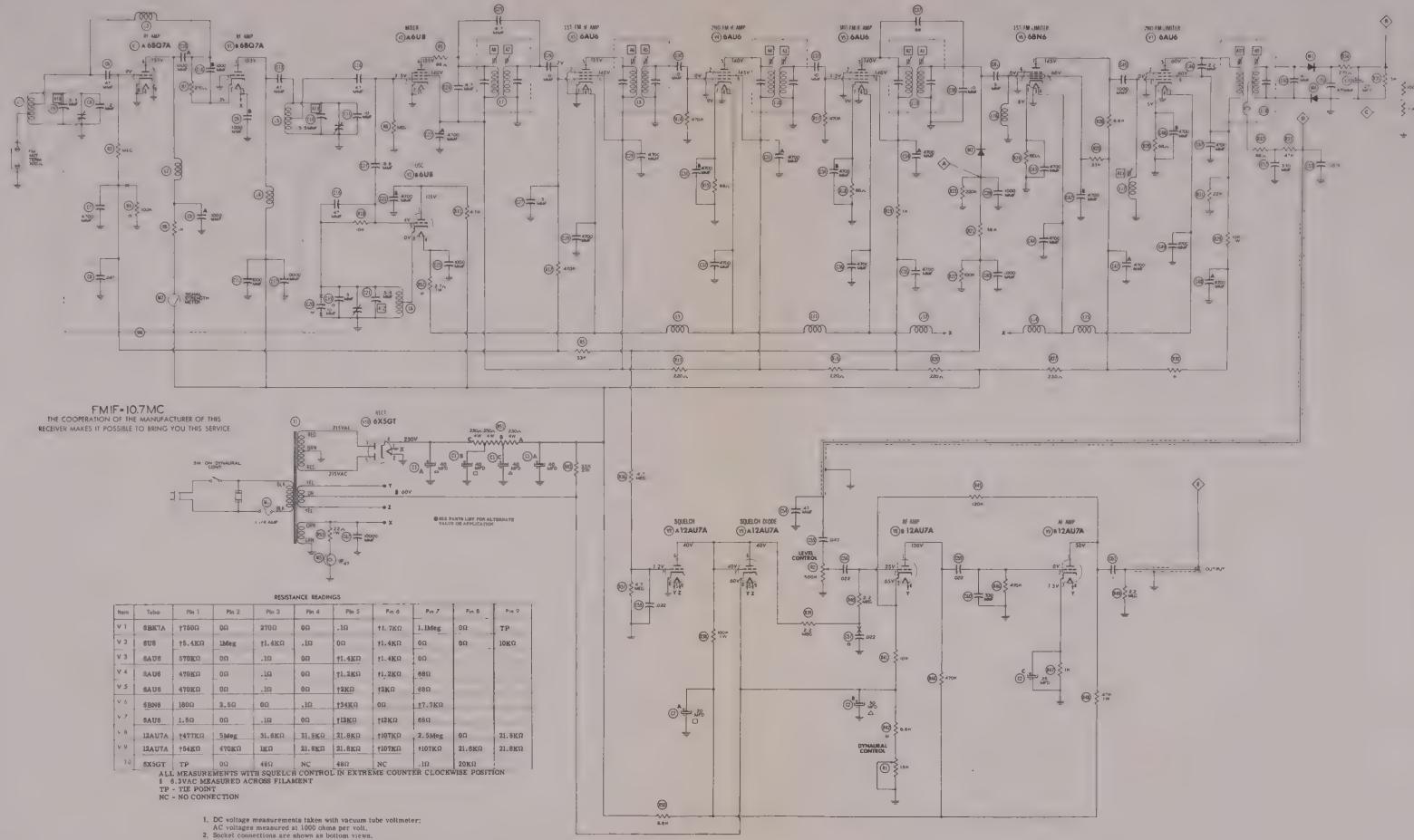


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



FM IF • 10.7MC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7A	†750Ω	0Ω	370Ω	0Ω	.1Ω	†1.7KΩ	1.1Meg	0Ω	TP
V 2	6U8	†5.4KΩ	1Meg	†1.4KΩ	.1Ω	0Ω	†1.4KΩ	0Ω	0Ω	10KΩ
V 3	6AU6	570KΩ	0Ω	.1Ω	0Ω	†1.4KΩ	†1.4KΩ	0Ω		
V 4	6AU6	470KΩ	0Ω	.1Ω	0Ω	†1.2KΩ	†1.2KΩ	68Ω		
V 5	6AU6	470KΩ	0Ω	.1Ω	0Ω	†2KΩ	†2KΩ	68Ω		
V 6	6BN6	180Ω	2.5Ω	0Ω	.1Ω	†34KΩ	0Ω	17.7KΩ		
V 7	6AU6	1.5Ω	0Ω	.1Ω	0Ω	†12KΩ	†12KΩ	68Ω		
V 8	12AU7A	†477KΩ	5Meg	31.6KΩ	31.8KΩ	21.8KΩ	†107KΩ	2.5Meg	0Ω	21.8KΩ
V 9	12AU7A	†54KΩ	470KΩ	1KΩ	21.8KΩ	21.8KΩ	†107KΩ	†107KΩ	21.6KΩ	21.8KΩ
1-2	5X9GT	TP	0Ω	48Ω	NC	48Ω	NC	.1Ω	20KΩ	

ALL MEASUREMENTS WITH SQUELCH CONTROL IN EXTREME COUNTER CLOCKWISE POSITION
† 6.3VAC MEASURED ACROSS FILAMENT
TP - TIE POINT
NC - NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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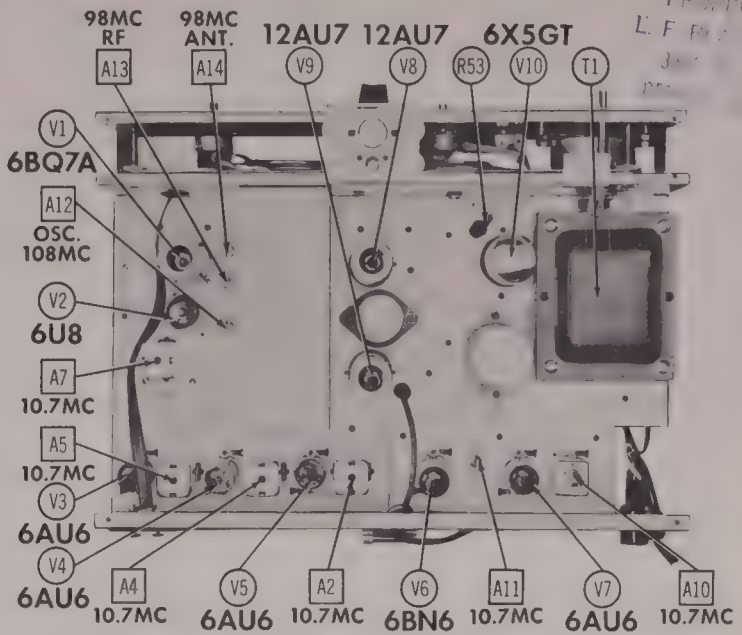
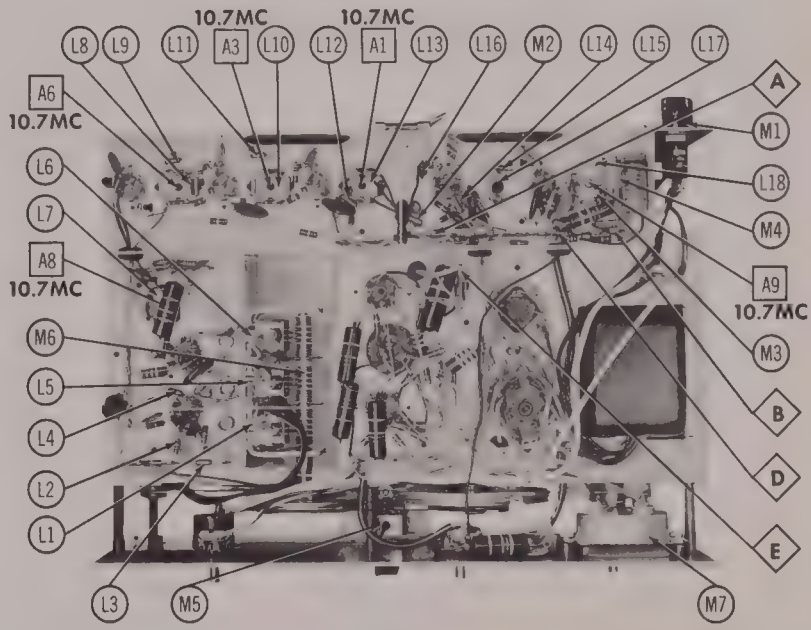


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
Short pin 9 of 6U8 (V2) to chassis throughout alignment.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.05MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6, A7, A8	Adjust for maximum deflection.
2.	"	High side to pin 2 (grid) of 6BN6 (V6). Low side to chassis.	10.7MC	"	"	DC probe to point (B). Common to chassis.	A10, A11	"
3.	"	"	"	"	"	DC probe to point (D). Common to point (C).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.05MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A1, A2, A3, A4, A5, A6, A7, A8	Disconnect stabilizing capacitor (C3). Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	High side to pin 2 (grid) of 6BN6 (V6). Low side to chassis.	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A10, A11	"
3.	"	"	"	"	"	Vert. Amp. to point (D). Low side to chassis.	A9	Reconnect stabilizing capacitor (C3). Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	270Ω Carbon Resistor	High side to antenna terminal. Low side to chassis.	108MC (Unmod)	FM	108MC	DC probe to point (E). Common to chassis.	A12	Adjust for maximum deflection.
5.	"	"	92MC	"	92MC	"	L6	Compress or expand for maximum deflection. Repeat steps 4 and 5 for proper tracking.
6.	"	"	98MC	"	98MC	"	A13, A14	Adjust for maximum deflection.

FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: H.H. Scott PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	6BK7A used as alternate in some versions
V2	Mixer-Osc.	6U8	6U8	9AE	
V3	1st. FM IF Amp.	6AU6	6AU6	7BK	
V4	2nd. FM IF Amp.	6AU6	6AU6	7BK	
V5	3rd. FM IF Amp.	6AU6	6AU6	7BK	
V6	1st. FM Limiter	6BN6	6BN6	7DF	
V7	2nd. FM Limiter	6AU6	6AU6	7BK	
V8	Squelch - AF Amplifier	12AU7A	12AU7A	9A	
V9	AF Amplier - Squelch Diode	12AU7A	12AU7A	9A	
V10	Rectifier	6X5GT	6X5GT	6S	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: H.H. Scott PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	200							
B	■40	200							
C	▲40	200							
D	40	200							
C2A	■20	200					TM-2004		
B	▲50	100					TD-50-150		
C	25	25							
C3	25	25	CET25/25	PRS25V25	BR252	TC26	TD-25-25	FM-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: H.H. Scott PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	12		CC-12		TCZ-12	Z019	NP0K-120			
C5	.5-5						532-08-0R5			
C6	47		CC-47	NP0-DI47	TCZ-47	Z033	NP0-338-470	ZT-5447	5TCC-Q47	
C7	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-511	5HK-D47	
C8	.047	400	CPM-047	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C9A	1000		CC2/-001	BPD-2X001	DD3-102	DK069	812-001	DCD521	5HK-2D1	
B	1000									
C10A	1000		CC2/001	BPD-2X001	DD3-102	DK069	812-001	DCD521	5HK-2D1	
B	1000									
C11	1000		CC-001	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C12	10000		CC-01	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C13	47		CC-47	NP0-DI47	TCZ-47	Z033	NP0-338-470	ZT-5447	5TCC-Q47	
C14	.5-5						532-08-0R5			
C15	10		CC-10NP0	NP0-DI10	TCZ-10	TZ09	NP0A-100	ZT-541	5TCC-Q1	
C16	47		CC-47	NP0-DI47	TCZ-47	Z033	NP0-338-470	ZT-5447	5TCC-Q47	
C17	6.8		CC-6.8	NP0-SI6.8	TCZ-6R8	Z013	NP0A-6R8	ZT-5568	5TCC-V68	
C18	47		CC-47	NP0-DI47	TCZ-47	Z033	NP0-338-470	ZT-5447	5TCC-Q47	
C19	5			NP0-DI5		Z011	NP0A-050	ZT-555	5TCCB-V47	Note 1
C20	10			N750-DI10	TCN-10	N018	N750K-100	NT-541	5TCU-Q1	Note 1
C21	.5-5						532-08-0R5			
C22A	4700		CC2/.0047	BPD-2X0047	DD3-502	DK079	811-0047	DC-525	5HK-2D47	
B	4700						811-0047	DC-525		
C23	1000		CC-001	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C24	4.7		CC-4.7	NP0-SI4.7	TCZ-4R7	TZ07	NP0A-4R7	ZT-5547	5TCCB-V47	
C25	4.7		CC-4.7	NP0-SI4.7	TCZ-4R7	TZ07	NP0A-4R7	ZT-5547	5TCCB-V47	
C26	10		CC-10NP0	NP0-SI10	TCZ-10	TZ09	NP0A-100	ZT-541	5TCC-Q1	
C27	15		CC-15NP0	NP0-SI15	TCZ-15	TZ11	NP0K-150		5TCC-Q15	
C28	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C29	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C30	10		CC-10NP0	NP0-SI10	TCZ-10	TZ09	NP0A-100	ZT-541	5TCC-Q1	
C31A	4700		CC2/0047	BPD-2X0047	DD3-502	DK079	811-0047	DC-525	5HK-2D47	
B	4700						811-0047	DC-525		
C32	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C33	10		CC-10NP0	NP0-SI10	TCZ-10	TZ09	NP0A-100	ZT-541	5TCC-Q1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: H. H. Scott PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C34A	4700		CC2/0047	BPD-2X0047	DD3-502	DK079	811-0047	DC-525	5HK-2D47	
B	4700						811-0047	DC-525		
C35	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C36	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C37	.68		CC-.68		TCZ-R68	TZ02	NP0A-0R68			
C38	10		CC-10NP0	NP0-SI10	TCZ-10	TZ09	NP0A-100	ZT-541	5TCC-Q1	
C39	1000		CC-001	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C40	1000		CC-001	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C41	5			NP0-SI5	TCZ-4R7	TZ07	NP0A-050	ZT-555	5TCCB-V47	
C42A	4700		CC2/0047	BPD-2X0047	DD3-502	DK079	811-0047	DC-525	5HK-2D47	
B	4700						811-0047	DC-525		
C43	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C44	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C45	1000		CC-001	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C46	2.2		CC-2.2	NP0-SI2.2	TCZ-2R2	TZ05	NP0A-2R2		5TCCB-V22	
C47	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C48A	4700		CC2/0047	BPD-2X0047	DD3-502	DK079	811-0047	DC-525	5HK-2D47	
B	4700						811-0047	DC-525		
C49	4700		CC-0047	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C50	4.7		CC-4.7	NP0-SI4.7	TCZ-4R7	TZ07	NP0A-4R7	ZT-5547	5TCCB-V47	
C51	470	500	CM2-470-5%	1469-00047	D6-471	5R5T47	811-471		MS-347	
C52	330	500	CM15-330	1469-00033	D6-331	5R5T33	811-331		MS-333	
C53	.0015	500	CPM-0015	1464-0015		1R5D15	811-152		MS-215	
C54	47		CC-47	NP0-SI47	TCZ-47	TZ22	NP0-338-470	ZT-5447	5TCC-Q47	
C55	.047	400	CPM-047	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C56	.022	400	CPM-022	BPD-02	DF-203	CUB4S22	817-02	PT6122	4TM-S22	
C57	.022	400	CPM-022	BPD-02	DF-203	CUB4S22	817-02	PT6122	4TM-S22	Note 2
C58	.022	400	CPM-022	BPD-02	DF-203	CUB4S22	817-02	PT6122	4TM-S22	
C59	.022	400	CPM-022	BPD-02	DF-203	CUB4S22	817-02	PT6122	4TM-S22	
C60	330	500	CM15-330	SI330	D6-331	5W5T33	GP2K-331	UC-5333	1FM-333	
C61	.1	400	CPM-.1	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C62	10000		CC-01	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	

Note 1. When C19 is 15MMF, C20 is not used.
Note 2. Not used in some versions.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: H.H.Scott PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	15KΩ	½	RCV-15K-3	B-20-S	A47-15K-S	Q11-119	U-26	Dynaural
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	Not Req.	SWE-12	76-1	US-26	Attach to R1A
R2A	500KΩ	½	RCV-500K-S	B-60	A47-500K-Z	Q13-133	U-48	Level
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: H.H.Scott PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	1Meg	½		BTS-1Meg	
R4	100KΩ	½		BTS-100K	Note 1
R5	33KΩ	½		BTS-33K	
R6	1000Ω	½		BTS-1000	
R7	270Ω	½		BTS-270	
R8	1Meg	½		BTS-1Meg	
R9	68Ω	½		BTS-68	
R10	10KΩ	½		BTS-10K	
R11	4700Ω	½		BTS-4700	
R12	470KΩ	½		BTS-470K	
R13	220Ω	½		BTS-220	
R14	470KΩ	½		BTS-470K	
R15	68Ω	½		BTS-68	
R16	220Ω	½		BTS-220	
R17	470KΩ	½		BTS-470K	
R18	68Ω	½		BTS-68	
R19	1000Ω	½		BTS-1000	
R20	220Ω	½		BTS-220	
R21	56KΩ	½		BTS-56K	
R22	100KΩ	½		BTS-100K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: H.H.Scott PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R23	220KΩ	½		BTS-220K	
R24	180Ω	½		BTS-180	
R25	33KΩ	½		BTS-33K	
R26	6800Ω	½		BTS-6800	
R27	220Ω	½		BTS-220	
R28	68Ω	½		BTS-68Ω	
R29	10KΩ	1		BTA-10K	
R30	1000Ω	½		BTS-1000	
R31	22KΩ	½		BTS-22K	
R32	68Ω	½		BTS-68	
R33	47KΩ	½		BTS-47K	
R34	270Ω	½		BTS-270	
R35	15KΩ	½		BTS-15K	
R36	4.7Meg	½		BTS-4.7Meg	
R37	4.7Meg	½		BTS-4.7Meg	
R38	100KΩ	1		BTA-100K	
R39	2.2Meg	½		BTS-2.2Meg	
R40	2.2Meg	½		BTS-2.2Meg	
R41	10KΩ	½		BTS-10K	
R42	6800Ω	½		BTS-6800	Note 2

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H.H. Scott PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R43	33KΩ	2		BTB-33K	
R44	470KΩ	½		BTS-470K	
R45	120KΩ	½		BTS-120K	
R46	470KΩ	½		BTS-470K	
R47	1000Ω	½		BTS-1000	
R48	47KΩ	1		BTA-47K	
R49	2.2Meg	½		BTS-2.2Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H.H. Scott PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R50	6800Ω 5%	½		BTS-6800 5%	
R51A	250Ω	4			
B	250Ω	4			
C	250Ω	4			
R52	2.7Ω	1			Note 3
R53	22Ω	1			

Note 1. Not used in some versions.
Note 2. Some versions use a 3300Ω resistor in this application.
Note 3. Some versions use a 3.3Ω, 1 watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA H.H.Scott PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @.44A	430VCT .087ADC	5VCT @.54A	6.3VAC @2.96A						

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA H.H. Scott PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω						Tapped
L2	RF Coil	0Ω						.33 Microhenry
L3	RF Coil	.1Ω			19-1000		4602	1 Microhenry
L4	RF Coil	.1Ω			19-1000		4602	1 Microhenry
L5	FM RF Coil	0Ω						Tapped
L6	FM Osc. Coil	0Ω						Tapped
L7	1st. FM Trans.	.6Ω	.6Ω		16-3487	FM-254	1463	
L8	2nd. FM Trans.	.6Ω	.6Ω		16-3487	FM-254	1463	
L9	Fil. Choke	.1Ω			19-1000		4602	1 Microhenry
L10	3rd. FM Trans.	.6Ω	.6Ω		16-3487	FM-254	1463	
L11	Fil. Choke	.1Ω			19-1000		4602	1 Microhenry
L12	Fil. Choke	.1Ω			19-1000		4602	1 Microhenry
L13	4th. FM Trans.	.6Ω	.6Ω		16-3487	FM-254	1463	
L14	Fil. Choke	.1Ω			19-1000		4602	1 Microhenry
L15	Fil. Choke	.1Ω			19-1000		4602	1 Microhenry
L16	RF Choke	2.3Ω			19-3075	TV-181	6172	80 Microhenries
L17	FM Limiter	1.4Ω						
L18	Ratio Det.	2.6Ω	.6ΩCT		17-3498	FM-255	1465	Tertiary winding-.6Ω

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA H.H. Scott PART No. FUSE	H.H. Scott PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	1 1/4A 125V			3131.25 (3AG S/B 1 1/4A)	342001	MDL 1 1/4A	HKP

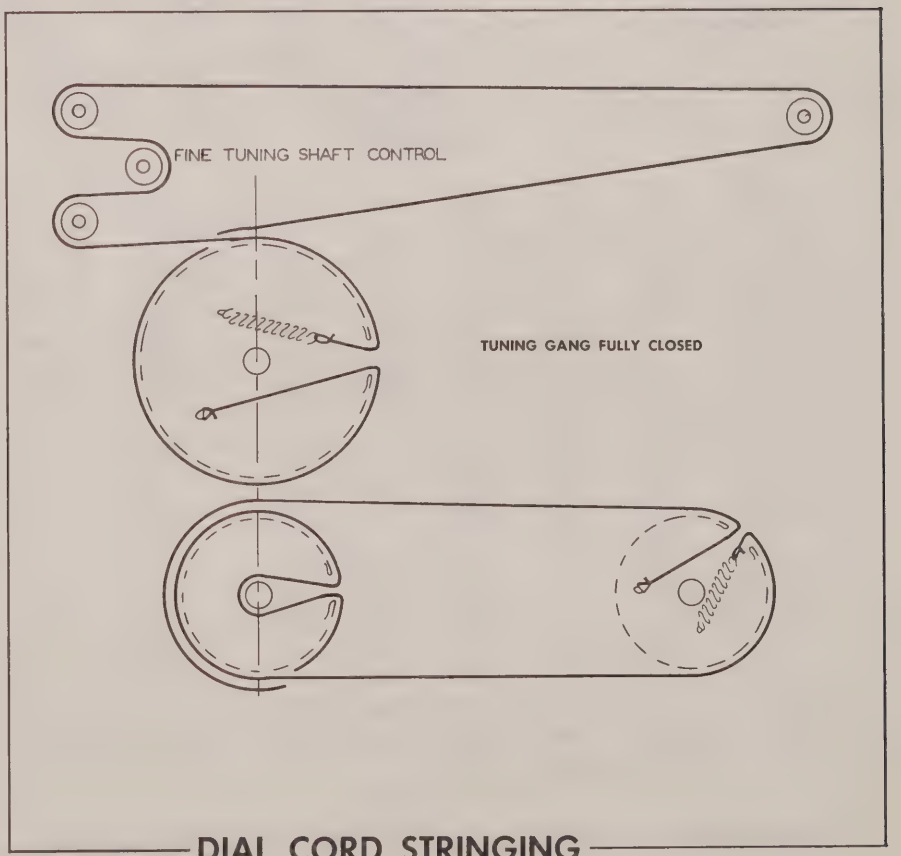
PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA H.H.Scott PART No.	REPLACEMENT DATA SYLVANIA PART No.	NOTES
M2	CK705A		1N54 or 1N54A	AGC Rectifier
M3	CK705A		1N54 or 1N54A	Ratio Detector
M4	CK705A		1N54 or 1N54A	Ratio Detector

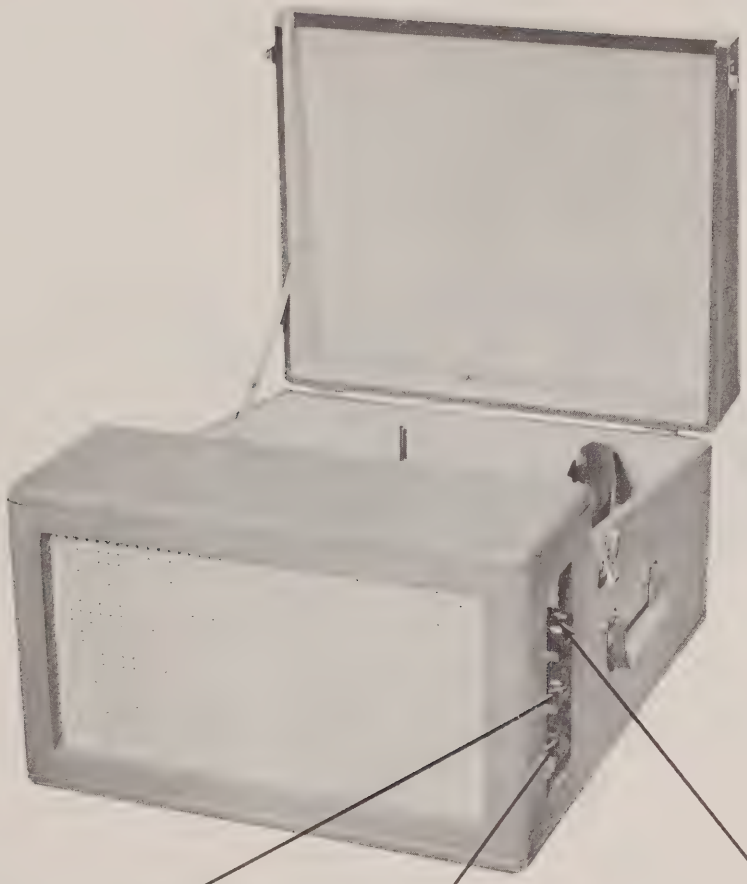
MISCELLANEOUS

ITEM No.	PART NAME	H.H.Scott PART No.	NOTES
M5	Dial Light	CAV-3X16	#47
M6	Tuning Cap.		3 Gang
M7	Meter		Signal Strength



DIAL CORD STRINGING

STEELMAN
MODEL 3A6



STEELMAN
MODEL 3A6

TRADE NAME	Steelman Model 3A6
MANUFACTURER	Steelman Phono & Radio Co. Inc., 12-30 Anderson Ave., Mt. Vernon, N. Y.
TYPE SET	AC Operated Phono Amplifier with 3 Speed Record Changer
TUBES (Four)	Types 12AX7 AF Amp. -Phase Inv., (2) 6AQ5 Output, 5Y3GT Rectifier
POWER SUPPLY	105-120 Volts AC-60~
RATING	.64 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE SIMILAR V-M MODEL 950-PHOTOFACT SET #216-FOLDER #11 OR RECORD CHANGER MANUAL CM-5

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

STEELMAN
Model 3A6

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Phase Inv. - AF Amplifier	12AX7	12AX7	9A	
V2	Output	6AQ5	6AQ5	7BZ	
V3	Output	6AQ5	6AQ5	7BZ	
V4	Rectifier	5Y3GT	5Y3GT	5T	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	350		AFH3-44	CO35	FP377	CDB4422	FMD-4540	TVL-3728
B	40	300						FM-4540	
C	40	300							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	100			SI100	D6-101	TP34	GP1K-101	UC-531	56A-T1	
C3	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C4	.01	600		BPD-01	D6-101	CUB6S1	GP2-333-103	PT611	6TM-S1	
C5	5000			BPD-005	DD-502	KO80	811-005	DC-525	5HK-D5	
C6	.022	400								
C7	1500			BPD-0015	D6-152	KO71	GP2K-152	UC-5215	5GA-T15	
C8	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C9	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C10	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C11	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C12	5000			BPD-005	DD-502	KO80	811-005	DC-525	5HK-D5	
C13	.01	600		BPD-01	D6-103	PJ6S1	GP2-333-103	PT611	6TM-S1	
C14	.01	600		BPD-01	D6-103	PJ6S1	GP2-333-103	PT611	6TM-S1	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3Meg	½	VC-1					Volume tapped at 260K.
R2A	800KΩ	½	VC-60		A47-1Meg-S	Q11-136	U-54	Bass
B	Shaft	-	Not Req.		KSS-3	Not Req.	Not Req.	Attach to R2A.
R3A	800KΩ	½	VC-60		A47-1Meg-S	Q11-136	U-54	Treble
B	Shaft		Not Req.		KSS-3	Not Req.	Not Req.	Attach to R3A.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R4	47KΩ	½		BTS-47K	
R5	2200Ω	½		BTS-2200	
R6	220KΩ	½		BTS-220K	
R7	2200Ω	½		BTS-2200	
R8	47KΩ	½		BTS-47K	
R9	220KΩ	½		BTS-220K	
R10	47KΩ	½		BTS-47K	

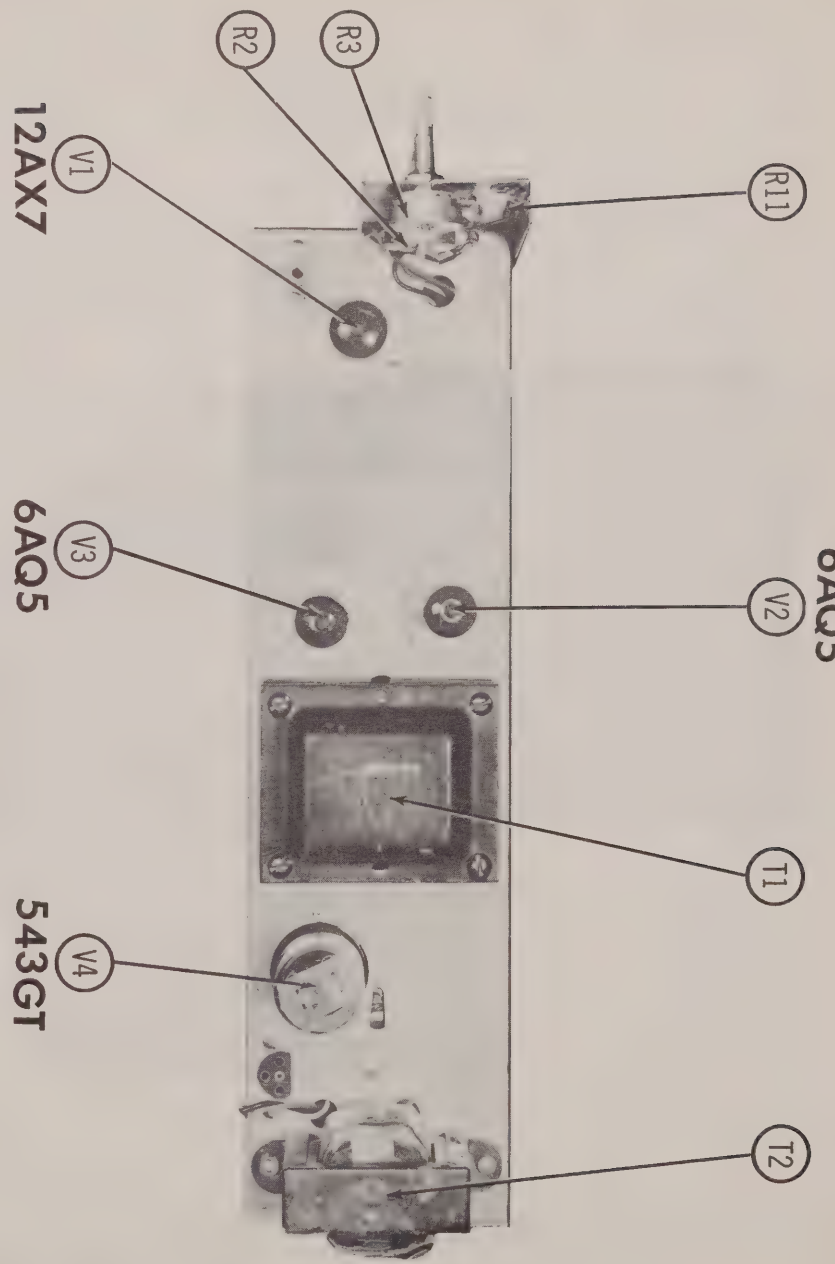
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R11	22KΩ	½		BTS-22K	
R12	10KΩ	½		BTS-10K	
R13	470KΩ	½		BTS-470K	
R14	200Ω	3			
R15	470KΩ	½		BTS-470K	
R16	2200Ω	1		BTA-2200	
R17	330Ω	2		BTB-330	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .64A	506VCT .070ADC	5VAC @ 2A	6.3VAC @ 1.5A	PT-1002	P9205 ①	P-3051	PM-8403①		R-813 ①

① Tape 6.3V center tap.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10KΩ CT	1.8Ω	TR-102 ①				26S46 ②		① Secondary has a feed back tap at .73Ω. ② Select correct taps.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	6"	PM	3.6Ω	SP-66	6A1	Speakers used in parallel.
SP2	6"	PM	3.6Ω	SP-66	6A1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	STEELMAN PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1				43	0-2 S-2	

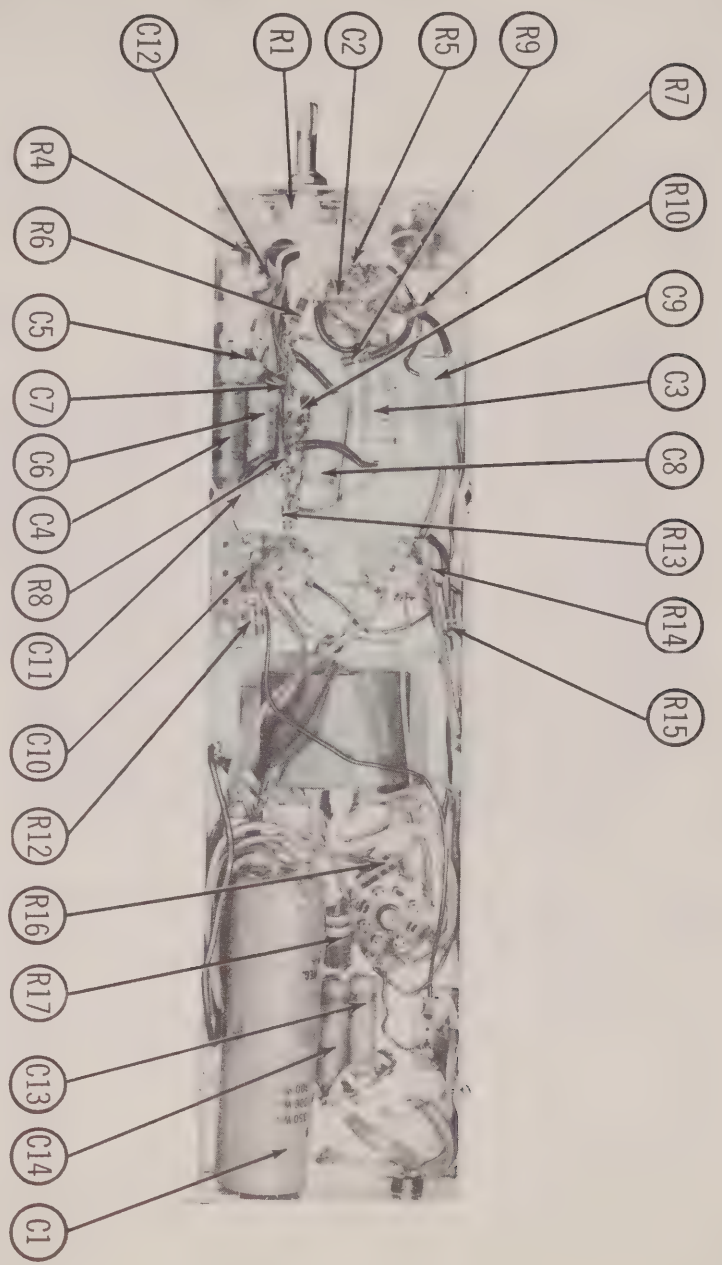
ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	STEELMAN PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2		* S-67 or † S-66 or ♦† S-66SD or ♦ S-66D	† AC-434 or ♦† AC-434D1 or †♦ AC-434D2 or ♦ AC-434D	† W-75TPS or ♦† W-75DS or ♦ W-75TPD	* Metal † Jewel ♦ Diamond

CHASSIS—BOTTOM VIEW



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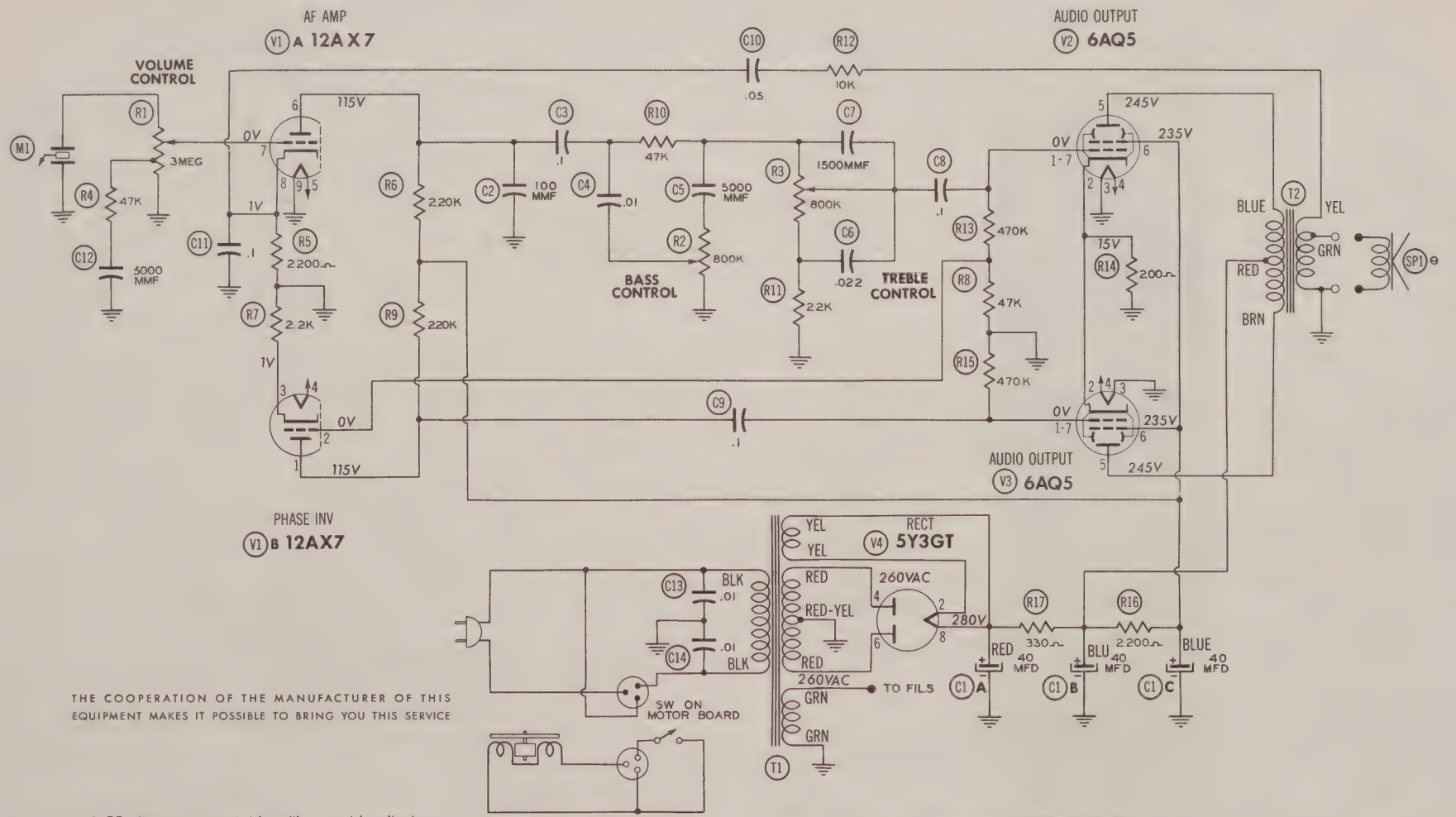
STEELMAN
PLEASE RETURN



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†220KΩ	47KΩ	2.2KΩ	.1Ω	.1Ω	†220KΩ	0Ω	2.2KΩ	0Ω
V 2	6AQ5	520KΩ	200Ω	0Ω	.1Ω	†630Ω	†2.5KΩ	520KΩ		
V 3	6AQ5	470KΩ	200Ω	0Ω	.1Ω	†630Ω	†2.5KΩ	470KΩ		
V 4	5Y3GT	0Ω	100KΩ	TP	60Ω	TP	65Ω	TP	100KΩ	

†MEASURED FROM PIN 2 OF V4.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

*TRADE MARK

STEWART-WARNER MODELS 21C-9740L, W, WB, X, 21T-9740A, R, RB

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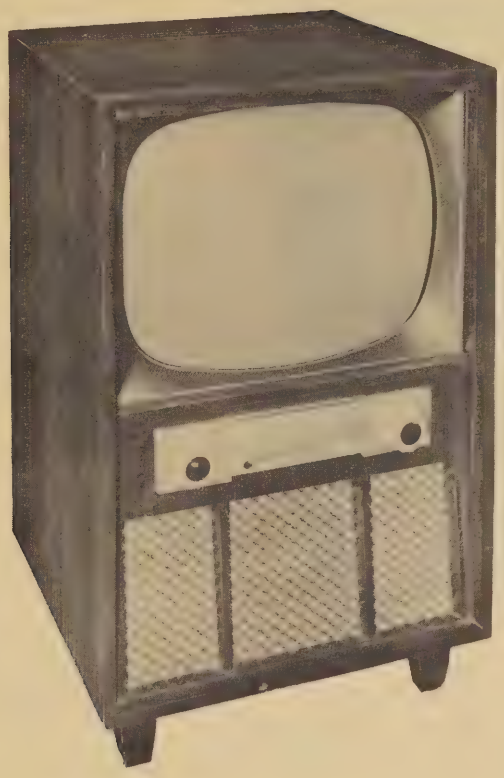

STEWART- WARNER MODEL 21C-9740W

TRADE NAME	STEWART-WARNER
MODELS	21C-9740L, 21C-9740W, 21C-9740WB, 21C-9740X, 21T-9740A, 21T-9740R, 21T-9740RB
MANUFACTURER	Stewart-Warner Electric, Division of Stewart-Warner Corp., 1300 N. Kostner Ave., Chicago 15,Ill.
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.47 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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STEWART-WARNER MODELS 21C-9740L, W, WB, X, 21T-9740A, R, RB

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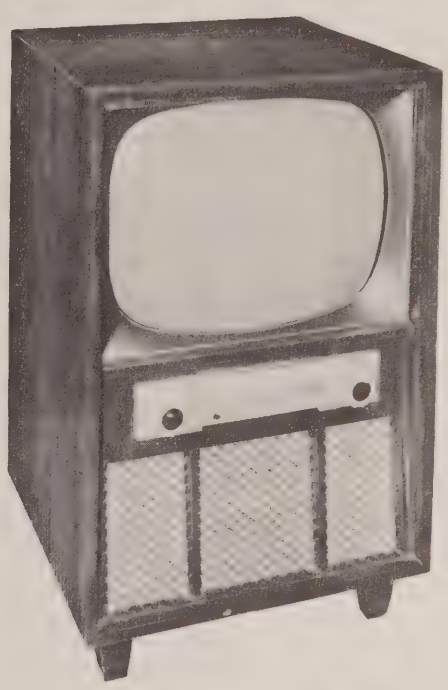
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from front panel of cabinet.
2. Remove 1 metal screw. Remove rear cover.
3. Disconnect speaker leads.
4. Remove 2 wood screws. Remove antenna terminal bracket.
5. Remove 4 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.



MODELS

21C-9740L, 21C-9740W, 21C-9740WB, 21C-9740X,
21T-9740A, 21T-9740R, 21T-9740RB

STEWART-WARNER MODELS
21C-9740L, W, WB, X, 21T-9740A, R, RB

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF tuner oscillator circuit may be accomplished as follows:

1. Set the Selector knob to VHF position.
2. Tune in a TV station and set the fine tuning control to the center of its range.
3. Remove the channel selector and fine tuning knobs.
4. Adjustments are accessible one at a time thru the small hole above and slightly to the left of the channel switch shaft.

To adjust the UHF oscillator, set the channel selector knobs to the desired UHF channel. The fine tuning knob should be at the center of its range. Remove knobs and adjust the oscillator slug, through the same hole as for VHF adjustments.

If two UHF channels are received and use the same UHF coil strips, the oscillator should be set for the channel closest to the center of the group.

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 4 wood screws; holding wood strip at the top edge of the safety glass. Remove wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See Tube Placement Chart on Page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from rear panel of the chassis. Adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary slug (A10) located on top of chassis.

FUSES

Two fuses are used. One for Horiz. Sweep Circuit protection and one for L. V. Power Supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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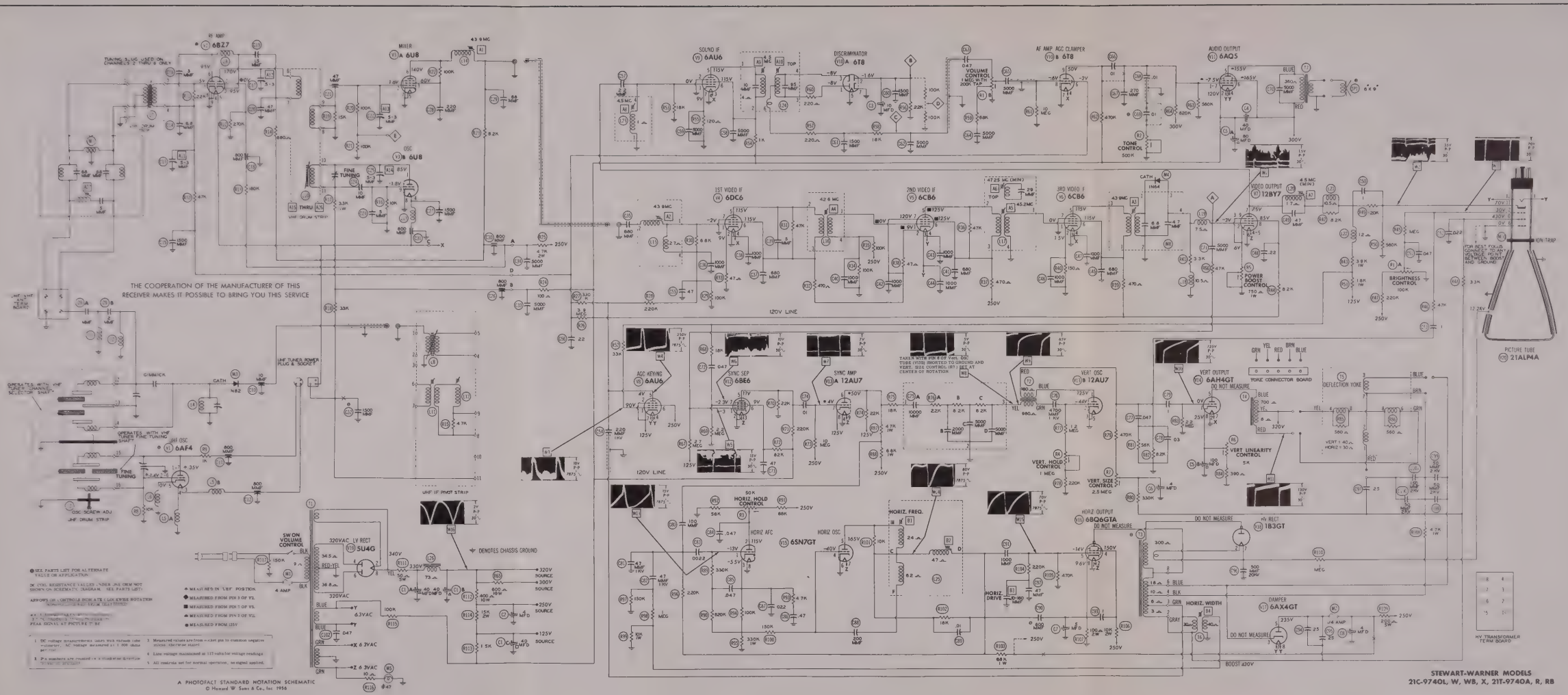
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
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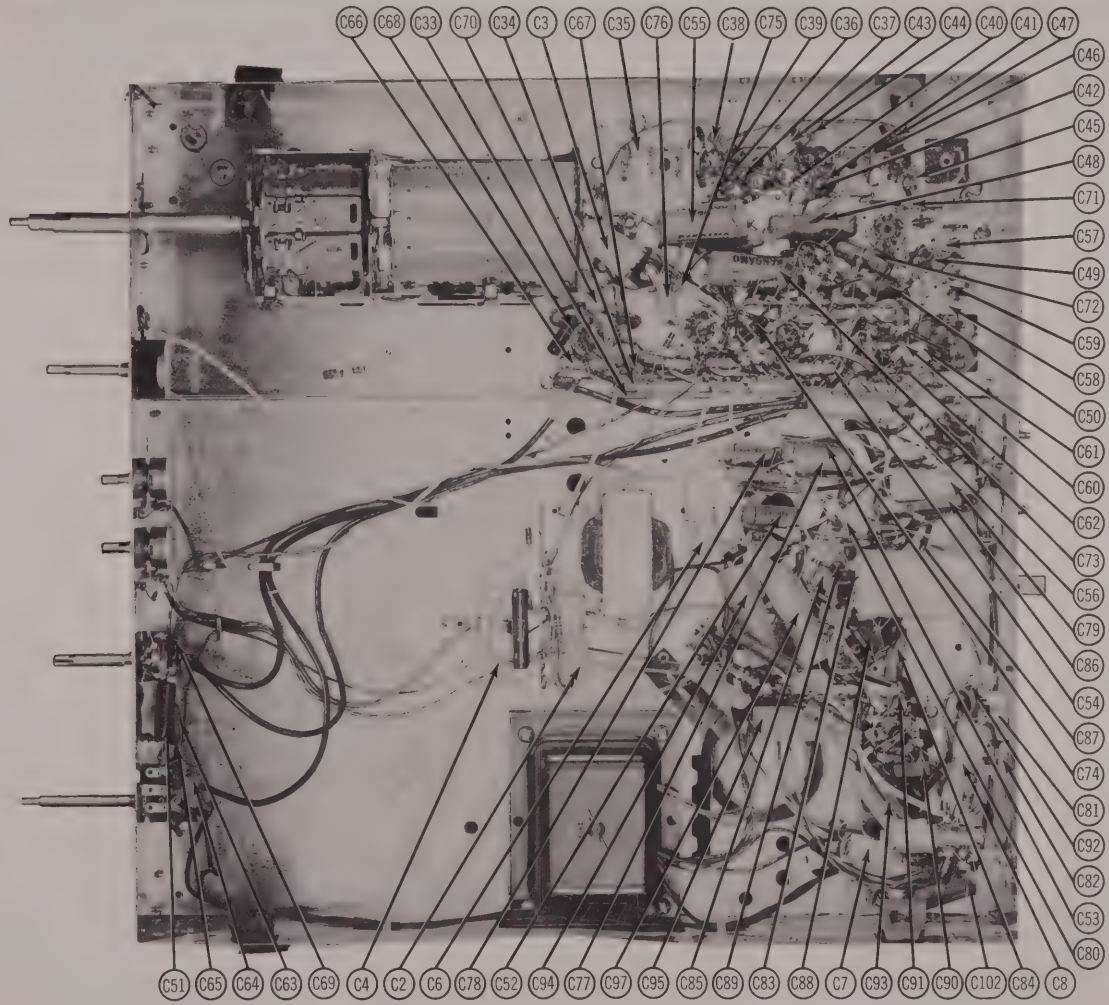
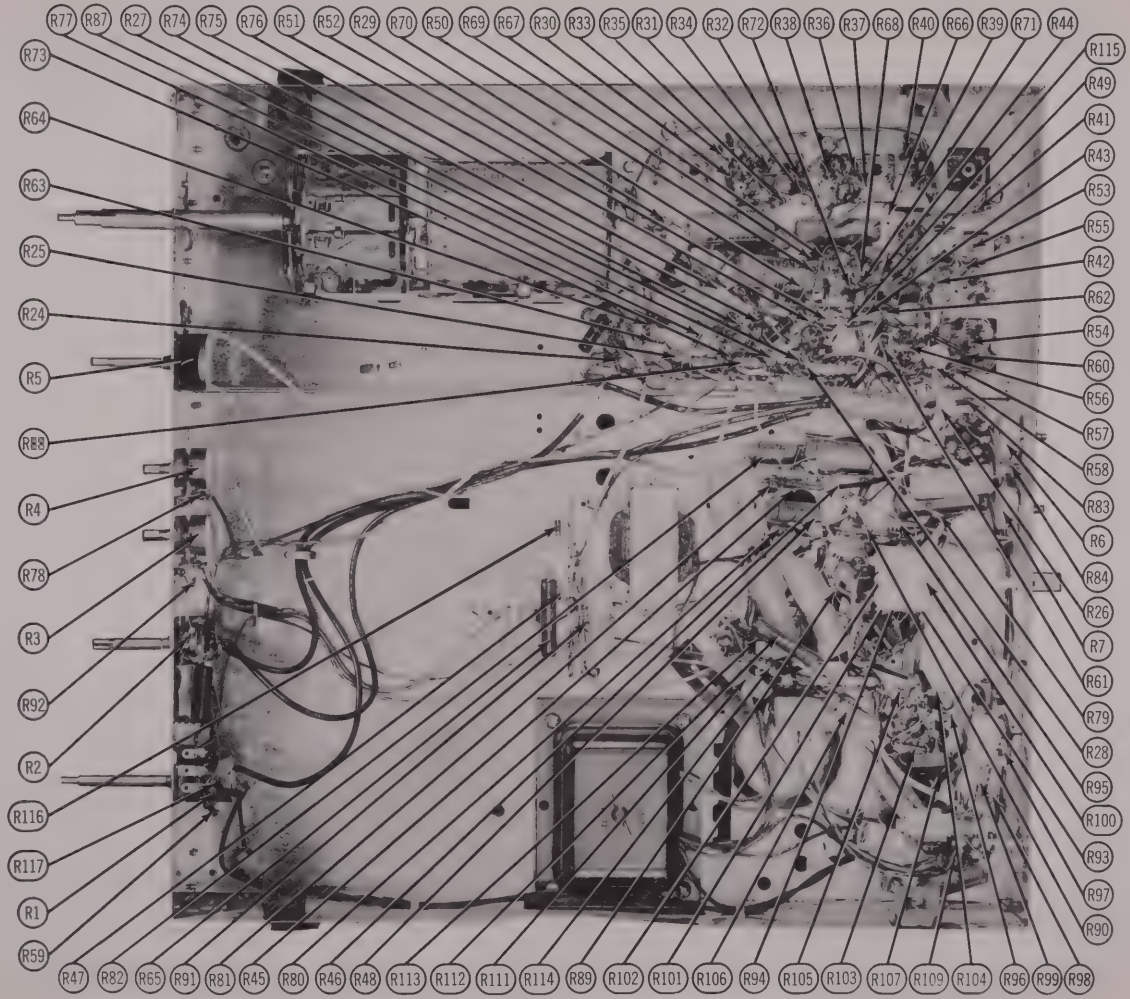
STEWART-WARNER MODELS 21C-9740L, W, WB, X, 21T-9740A, R, RB
DENOTES CHASSIS GROUND
120V LINE
BOOST 420V
DO NOT MEASURE



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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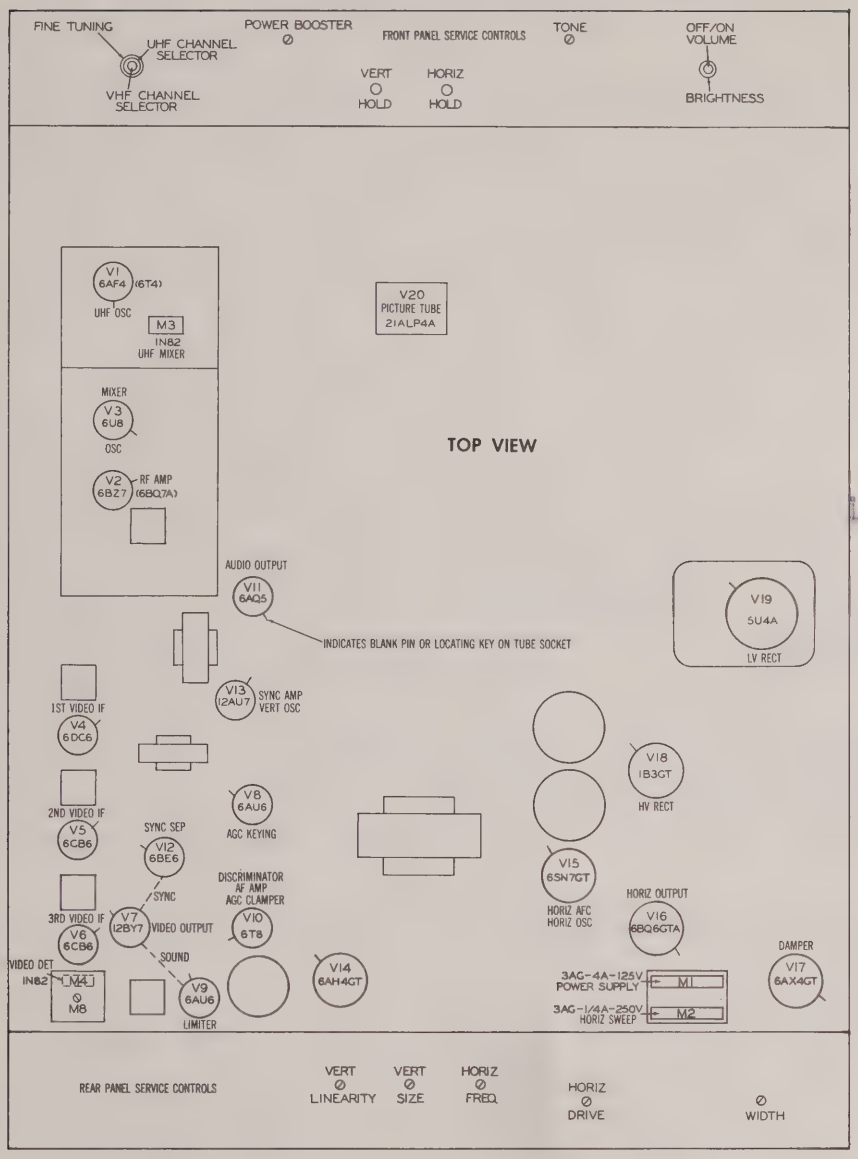
[illegible]

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7, V11 (V1 UHF Only)
No pic, no sound, has snow - V2, V3, V4
No pic, has sound, has raster - V7, V8, V20
Has pic, no sound - V9, V10, V11
Overloaded picture - V8, V10

SYNC FAILURE
No vert. sync - V13
No horiz. sync - V13, V15
No vert. or horiz. sync - V12, V13

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V20, Fuse (M2)
No vertical deflection - V13, V14
Poor vert. linearity or foldover - V13, V14
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V13
Horiz. off freq. - V13, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V15) to disable the high voltage.

VIDEO IF ALIGNMENT

The local oscillator should be disabled to reduce the possibility of erroneous indications. To do this remove the tuner bottom shield and place a strip of transparent cellulose tape across the first two contacts (from front) of an unused channel strip, then switch the tuner to this insulated channel strip. Short the antenna terminals to chassis. Connect the negative lead of a 3 volt bias supply to the ungrounded side of C55. Connect the positive lead to chassis. If the IF stages should break into oscillation during alignment, it will be indicated by excessive deflection on VTVM. Also, the voltage due to IF oscillation will be unaffected by signal strength from the generator. When IF oscillation is encountered, it may be eliminated by detuning the IF coils in different directions or increasing the bias from 3 to 4.5 volts. If the IF stages are aligned using 4.5 volts bias, the IF channel should be stable with the bias reduced to -3 volts. Use only enough signal generator output to produce a usuable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube (V3). Low side to chassis.	43.9MC (Unmod.)	Channel with insulated channel strip	DC probe thru 10KΩ to point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	42.6MC	"	"	A4	"
3.	"	"	45.2MC	"	"	A5	"
4.	"	"	47.25MC	"	"	A6	Increase signal generator output for useable reading on VTVM. Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment". If a separate marker generator is used couple its output loosely to the sweep generator output cable. Attenuate sweep generator output for a reading of approximately one volt at point (A) on VTVM. Attenuate marker generator so as not to distort waveform on scope. Connect a .001MFD capacitor across vertical input terminals of the oscilloscope. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over converter tube (V3). Low side to chassis.	4.5MC (10MC Swp.)	45.75MC 41.25MC	Channel with insulated channel strip	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary slightly retouch A1 thru A3 for desired response. Increase scope gain and check position of 41.25MC marker. It should appear on response curve as in Fig. 1 when A1, A2 and A3 are properly adjusted for position of 45.75MC marker.

4.5MC TRAP ALIGNMENT

Set the power booster control (R5) fully counterclockwise. Remove the first video IF amplifier tube (V4) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector (Fig. 2) to pin 11 (cathode) of picture tube.	A7	Adjust for MINIMUM deflection. Replace V4 in its socket.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set power booster control (R5) fully counterclockwise. Short antenna terminals to chassis. Connect two matched 100KΩ (±1%) resistors in series from point (B), to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic. Remove the first video IF amplifier tube (V4) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC prboe thru 10KΩ to point (B). Common to chassis.	A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe thru 10KΩ to point (C). Common to point (D).	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Replace V4 in its socket.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Remove the first video IF amplifier tube (V4) from its socket. Set power booster control (R4) sully counter clockwise. Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp.)	4.5MC	Any	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A8, A9	Disconnect stabilizing capacitor (C3). Adjust for curve of maximum and amplitude and symmetry similar to Fig. 3.
8.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point (C). Low side to chassis.	A10	Reconnect C3. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. Slightly retouch A9 for maximum amplitude and straightness of crossover lines. Replace V4 in its socket.

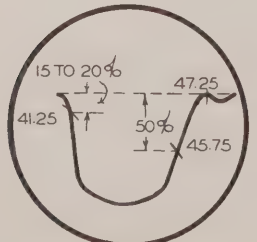


FIG. 1

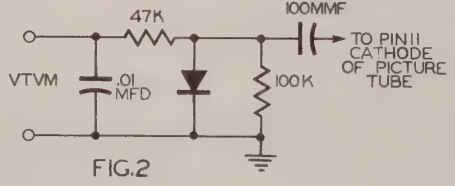


FIG. 2

FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT

Remove the celloulose tape from the tuner channel strip. Leave bias connected as under "Video IF Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	195MC (10MC Swp.)	193. 25MC 197. 75MC	10	Vert. Amp. thru 10KΩ to point (E). Low side to chassis.	A11, A12, A13	Adjust for response curve similar to Fig. 5 with markers above 90%.
10.	"	"	213MC (10MC Swp.)	211. 25MC 215. 75MC	13	"		If markers fall below 70% on any channel make compromise adjustment of A11, A12 and A13 with channel selector set to that channel then check all other channels to see that they have not been seriously affected.
			207MC (10MC Swp.)	205. 25MC 209. 75MC	12			
			201MC (10MC Swp.)	199. 25MC 203. 75MC	11			
			189MC (10MC Swp.)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp.)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp.)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp.)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp.)	77. 25MC 81. 75MC	5			
			69MC (10MC Swp.)	67. 25MC 71. 75MC	4			
			63MC (10MC Swp.)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp.)	55. 25MC 59. 75MC	2			

VHF OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency for a majority of the channels it may be possible to correct them in one step using adjustment A14. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment A14 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The oscillator adjustments are reached through a hole just above and slightly to the left of the channel switch shaft (hole extends thru UHF tuner). The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel. Leave battery connected as under "Video IF Alignment". Connect a .001MFD capacitor across the vertical input terminals of oscilloscope. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	195MC (10MC Swp.)	193. 25MC 197. 75MC	10	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A15	Attenuate sweep generator output to maintain not more than 1 Volt at VTVM. Adjust to place sound marker in trap notch as in Fig. 6. Video marker should be at 50%.
			213MC (10MC Swp.)	211. 25MC 215. 75MC	13		A16	
			207MC (10MC Swp.)	205. 25MC 209. 75MC	12		A17	
			201MC (10MC Swp.)	199. 25MC 203. 75MC	11		A18	
			189MC (10MC Swp.)	187. 25MC 191. 75MC	9		A19	
			183MC (10MC Swp.)	181. 25MC 185. 75MC	8		A20	
			177MC (10MC Swp.)	175. 25MC 179. 75MC	7		A21	
			85MC (10MC Swp.)	83. 25MC 87. 75MC	6		A22	
			79MC (10MC Swp.)	77. 25MC 81. 75MC	5		A23	
			69MC (10MC Swp.)	67. 25MC 71. 75MC	4		A24	
			63MC (10MC Swp.)	61. 25MC 65. 75MC	3		A25	
			57MC (10MC Swp.)	55. 25MC 59. 75MC	2		A26	

UHF TUNER ALIGNMENT

The UHF portion of the receiver has been properly aligned at the factory and is very stable. If the UHF tuner is known to be out of alignment or is in need of major repair the entire unit including the tube should be returned to the factory service department.

41MC TRAP ADJUSTMENT

The 41MC trap should be tuned to minimize interference caused by signals which fall within the video IF bandpass (40-48MC). Tune in a station on which interference is noted and adjust A27 for minimum interference in the picture.

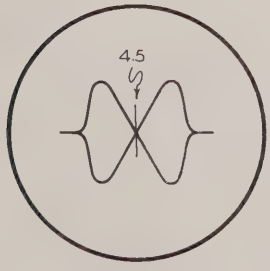


FIG. 4

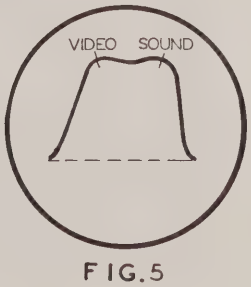


FIG. 5

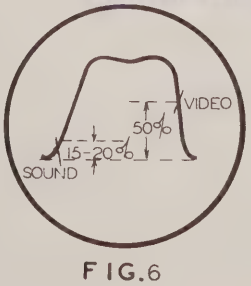
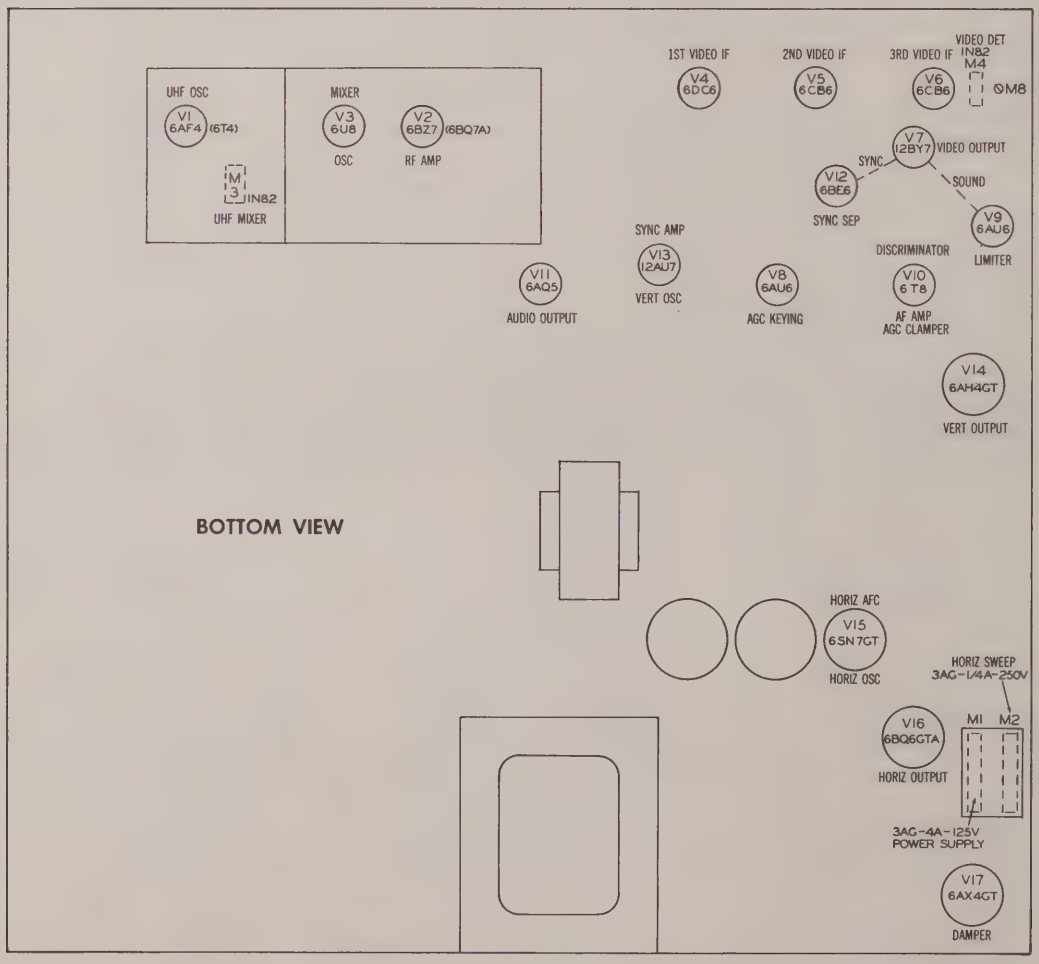


FIG. 6

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	*■ 4. 4KΩ	10KΩ	. 1Ω	0Ω	0Ω	10KΩ	*■ 4. 4KΩ		
V 2	6BZ7	†5. 9KΩ	130KΩ	INF	0Ω	. 1Ω	INF	650KΩ	0Ω	0Ω
V 3	6U8	■ 3. 4KΩ	200KΩ	† 100KΩ	. 1Ω	0Ω	†13KΩ	0Ω	0Ω	10KΩ
V 4	6DC6	100KΩ	47Ω	0Ω	. 1Ω	▲ 470Ω	▲ 470Ω	0Ω		
V 5	6CB6	60KΩ	▲47Ω	■ 100KΩ	■ 100KΩ	† 1KΩ	† 1KΩ	INF		
V 6	6CB6	. 1Ω	150Ω	0Ω	. 1Ω	■ 470Ω	■ 470Ω	0Ω		
V 7	12BY7	40Ω	3. 3KΩ	40Ω	. 1Ω	. 1Ω	0Ω	†16KΩ	■ 8. 2KΩ	40Ω
V 8	6AU6	†45KΩ	† 10KΩ	■ 100KΩ	■ 100KΩ	320KΩ	†500Ω	† 10KΩ		
V 9	6AU6	1Ω	0Ω	. 1Ω	0Ω	■1KΩ	■1KΩ	120Ω		
V 10	6T8	INF	22KΩ	INF	. 1Ω	0Ω	600KΩ	0Ω	10Meg	■ 470KΩ
V 11	6AQ5	400KΩ	40KΩ	■ 100KΩ	■ 100KΩ	† 1. 1KΩ	† 700Ω	400KΩ		
V 12	6BE6	† 3Meg	0Ω	. 1Ω	0Ω	■ 60KΩ	■ 82KΩ	2. 2Meg		
V 13	12AU7	◓ 2. 5Meg	2Meg	0Ω	0Ω	0Ω	† 9KΩ	† 10Meg	†10KΩ	. 1Ω
V 14	6AH4GT	2. 2Meg	0Ω	TP	TP	† 800Ω	TP	. 1Ω	1. 5KΩ	
V 15	6SN7GT	1. 5Meg	† 60KΩ	450KΩ	500KΩ	† 68KΩ	0Ω	. 1Ω	0Ω	
V 16	6BQ6GTA	TP	. 1Ω	TP	†10KΩ	470KΩ	TP	0Ω	100Ω	TOP CAP ◓18Ω
V 17	6AX4GT	NC	TP	1. 2Meg	TP	† 700Ω	TP	■ 100KΩ	■ 100KΩ	
V 18	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ◓ 318Ω
V 19	5U4G		30KΩ		35Ω		37Ω		30KΩ	
V 20	21ALP4A	■ 100KΩ	† 1. 3Meg	PIN 6 0Ω	PIN 10 ▲33KΩ	PIN 11 ‡120K	PIN 12 ■ 100KΩ			

* MEASURED IN "UHF" POSITION.
■ MEASURED FROM 120V LINE.
▲ MEASURED FROM PIN 7 OF V5.
† MEASURED FROM PIN 8 OF V19.
◓ MEASURED FROM PIN 3 OF V17.
TP-TIE POINT.
NC-NO CONNECTION.



TUBE PLACEMENT CHART

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Stewart-Warner PART No.	STANDARD REPLACEMENT		
V1	UHF Osc.	6AF4	6AF4	7DK	6T4 may be used as an alternate.
V2	RF Amp.	6BZ7	6BZ7	9AJ	6BQ7A may be used as an alternate.
V3	Osc. Mixer	6U8	6U8	9AE	
V4	1st Video IF Amp.	6DC6	6DC6	7CM	
V5	2nd Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output	12BY7	12BY7	9BF	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Limiter	6AU6	6AU6	7BK	
V10	Discriminator-AF Amp. - AGC Clamper	6T8	6T8	9E	
V11	Audio Output	6AQ5	6AQ5	7BZ	
V12	Sync Sep.	6BE6	6BE6	7CH	
V13	Sync Amp. - Vert. Osc.	12AU7	12AU7	9A	
V14	Vert. Output	6AH4GT	6AH4GT	8EL	
V15	Horiz. AFC-Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6BQ6GTA	6BQ6GTA	6AM	
V17	Damper	6AX4GT	6AX4GT	4CG	
V18	HV Rect.	1B3GT	1B3GT	3C	
V19	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	Stewart-Warner PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V20	21ALP4A ①	21ALP4A ① 21ALP4	21ALP4A ①	21ALP4A ② 21ALP4 21ALP4A/B ②	21ALP4A ① 21ALP4	12L 12L 12L	① Aluminized ② Silver Screen

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Stewart-Warner PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	508072	AFH3-44	C035	FP377	TM-T40-450	T-170	TVL-3787
B	▲40	450							
C	■40	450							
C2	4	450	504719	PRS450V-4	BR445	TC70	TD-4-450	FM-4504	TVA-1702
C3	10	150	505174	PRS150V-10	BR1015	TC42	TD-10-150	FM-1512	TVA-1406
C4	40	300	160095	PRS350V-40	BR4035	TC78	TD-40-350	FM-4540	TVA-1611
C5A	▲80	250	509002	AFH2-91-50	B087	FP229.8	TM-3040	D-322	TVL-3722
B	■100	50							
C6	4	450	504719	PRS450V-4	BR445	TC70	TD-4-450	FM-4504	TVA-1702
C7	5	50	504937	PRS150V-4	BR550	TC30	TD-5-50	MMT-0505	TVA-1303
C8	4	450	504719	PRS450V-4	BR445	TC70	TD-4-450	FM-4504	TVA-1702

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C9A	1									
B	2									
C10	10									
C11	800			EF-001	MFT-1000					
C12	800			EF-001	MFT-1000					
C13	.5-3				829-3		3115-01-0R5	CT565A		
C14	6.8			NP0-DI6.8	TCZ-6R8	Z013	NP0A-6R8	ZT-5568	5TCCB-V68	
C15	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C16	3			NP0-DI3	TCZ-3R3	Z007	NP0A-030	ZT-553	5TCCB-V3	
C17	.5-3				829-3		3115-01-0R5	CT565A		
C18	800			EF-001	MFT-1000					
C19	1.5			NP0-SI1.5	TCZ-1R5	Z004	NP0A-1R5	ZT-5515	5TCCB-V15	
C20	47			DD-000047	DD-470	G033	831-470	UC-5447	5GA-Q47	
C21	47			EF-00005	MFT-50					
C22	.5-3				829-3		3115-01-0R5	CT565A		
C23	5									
C24	10			N750-DI10	TCN-10	N018	N750A-100	NT-541	5TCU-Q1	
C25	.5-3				829-3		3115-01-0R5	CT565A		
C26	800			EF-001	MFT-1000					
C27	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C28	220			BPD-00022	DD-221	G051	811-221	UC-5322	5GA-T22	
C29	68			N750-DI68	TCN-68	N038	N750L-680		5TCU-Q68	
C30	800			EF-001	MFT-1000					
C31	800			EF-001	MFT-1000					
C32	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	Note 1
C33	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C34	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C35	680		513044	BPD-00068	DD-681	K065	811-681	UC-5368	5GA-T68	
C36	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C37	680		513044	BPD-00068	DD-681	K065	811-681	UC-5368	5GA-T68	
C38	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C39	5		513449	NP0-SI4.7	TCZ-4R7	TZ07	NP0A-050	ZT-555	5TCCB-V47	
C40	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C41	680		513044	BPD-00068	DD-681	K065	811-681	UC-5368	5GA-T68	
C42	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C43	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C44	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C45	680		513044	BPD-00068	DD-681	K065	811-681	UC-5368	5GA-T68	
C46	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C47	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C48	.22	200	512238	P288N-22		CUB2P22		PT4022	2TM-P22	
C49	47		513438	NP0-SI47	TCZ-47	TZ22	NP0-338-470	ZT-5447	5TCC-Q47	
C50	.1	200	512216	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C51	.047	200	512235	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	

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PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	.022	600	512234	BPD-03	DF-203	CUBS232	417-03 ◆	PT6123	6TM-S23	
C53	.1	200	512216	P286N-1	DF-104	CUB2P1		PT401	2TM-P1	
C54	220	1000	513032	HVD-15-0022	DD-221	VY22	IR5KV-221	DC30332	10GA-T32	
C55	.47	200	512239	P286N-47		CUB2P47		PT4047	2TM-P47	
C56	.22	400	512238	P286N-22		CUB4P22		PT4023	4TM-P23	
C57	3.3		513001	MP0-012.2	TCZ-2R2	K081	501-005	MP0A-2R2	5TCCB-V32	
C58	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C59	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C60	1500		513010	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C61	1500		513010	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C62	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C63	.047	200	512235	BPD-05	DF-503	CUB3P47		PT4147	3TM-S47	
C64	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C65	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C66	.01	400	512205	BPD-01	DD-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C67	270		513006	BPD-271	DD-271	CUB4S1	5GA-271	DC-5237	5GA-T27	
C68	.01	400	512205	BPD-01	DD-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C69	.01	400	512205	BPD-01	DD-103	CUB4S1	GP3-333-103	PT411	4TM-S1	Note 1
C70	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C71	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C72	.047	200	512235	BPD-05	DF-503	CUB2P47		PT4047	2TM-P47	
C73	.47	200	512238	P286N 47		CUB3P47		PT4047	3TM-P47	
C74	.01	400	512205	BPD-01	DD-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C75A	10000							DC-541		
B	2000		+5008662	PA-110	† PC-100	† 115TM1	1406-01	DC 522	Y-1	
C	5000			† BPD-01	† DD-103	† K082	† 811-01	DC-538	5HK-S1	
D	5000							DC-525		
C76	4700	1000	512533							
C77	.047	400	512236	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C78	.03	200	512210	BPD-03	DF-303	CUB4S3		PT403	4TM-S3	
C79	.1	600	512216	P286N-1	DF-104	CUB4P1		PT401	4TM-P1	
C80	100	500	512302	1469-0001	DD-101	SR5T1	811-101	MC8235	4M-31	
C81	47	1000	513030	HVD-15-47	DD-470	VQ47	IR5KV-470	DD30447	10GA-Q47	
C82	47	1000	513030	HVD-15-47	DD-470	VQ47	IR5KV-470	DD30447	10GA-Q47	
C83	.0022	400	512232		D6-222	CUB4D22	GP3-333-222	PT4223	4TM-D22	
C84	.047	400	512236	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C85	.047	200	512235	BPD-05	DF-503	CUB2S47		PT4047	2TM-S47	
C86	.47	200	512239	P286N-47		CUB3P47		PT4047	3TM-P47	
C87	.022	400	512233	BPD-03	DD-303	CUB4S22	417-03	PT4223	4TM-S23	
C88	500	1000	512550	1469-0002		SR5T2		MC8237	4M-33	
C89	.01	400	512231	1469-0006		SR5T8		MC8261	4M-38	Note 2
C90	800	500	512543	1469-0008		SR5T9		MC8262	4M-39	
C91	1000		513009	S11000	D6-102	TP52	GP2L-102	MC-102	5HK-D1	
C92	47		513438	MPG-S47	TCZ-4T	TZ3S	MPG-338-470	ST-5447	5TCC-Q47	
C93	.1	600	512216	P286N-1	DF-104	CUB3P1		PT301	6TM-P1	
C94	.25	600	512224	P288N-25		CUB6P25		PT6025	6TM-P25	
C95	.25	600	512234	P288N-25		CUB6P25		PT6025	6TM-P25	
C96	500	30000	530990	UV-502	TV3-503	MMU-30T5	413	HV20035A	30DK-T5	
C97	.25	600	512234	P288N- 25		CUB6P25		PT6025	6TM-P25	
C98	150	3000	513043	HVD-30-0005	DD30-151	VT2T5	3KV-151	MCL315	30GA-T15	
C99	150	3000	513043	HVD-30-0005	DD30-151	VT2T5	3KV-151	MCL315	30GA-T15	
C100	150	3000	513043	HVD-30-0005	DD30-151	VT2T5	3KV-151	MCL315	30GA-T15	
C101	150	3000	513043	HVD-30-0005	DD30-151	VT2T5	3KV-151	MCL315	30GA-T15	
C102	.047	600	512237	BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	

Note 1. Not used in some versions.
Note 2. Some versions use 8200MMF in this application.
◆ Items C75A, C75B, C75C, C75D, R76A, R76B and R76C are combined in one unit.
† To replace original unit, install 10000MMF unit in series with C-R unit input lead.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Stewart-Warner PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100KΩ	½	521989	F1-31	RTV-545	QJ-518 †	UF15L	Brightness (Panel)
B	1Meg	½		R2-57			UR15-T25 ◆	Volume (Rear) Tap at 200KΩ
C	Switch			KB-1			US-25	Attach to R1B.
R2A	500KΩ	½	520768	AB-39	A47-500K-S	QJ1-123	U-50	Tone
B	Shaft		Not Req.	AK-4	KS6-3	Not Req.	Not Req.	Attach to R3A.
R3A	50KΩ	½	521059	AB-31	A47-50K-S	QJ1-123	U-35	Horizontal Hold
B	Shaft		Not Req.	AK-4	KS6-3	Not Req.	Not Req.	Attach to R3A
R4A	1Meg	½	521058	AB-89	A47-1Meg-S	QJ1-127	U-54	Vertical Hold
B	Shaft		Not Req.	AK-4	KS6-3	Not Req.	Not Req.	Attach to R4A.
R5A	750Ω	1	523934	AB-43	A47-750	QJ7-105	R750L	Power Booster (Wire Wound)
B	Shaft		Not Req.	AK-16	KS6-3	Not Req.	DS-36	Attach to R5A.
R6A	500Ω	1	530645	AB-83	A47-500Ω-S	QJ7-104	SU-34	Vertical Linearity
B	Shaft		Not Req.	AK-1	FK8-1	Not Req.	Not Req.	Attach to R6A.
R7A	2.5Meg	½	520944	AB-83	A47-2.5Meg-S	QJ1-230	SU-365	Vertical Size
B	Shaft		Not Req.	AK-1	FK8-3	Not Req.	Not Req.	Attach to R7A.

◆ Universal Replacement (Mallory Exact Duplicate Part No. UR1338S)
† Concentrikit Equivalent: K-2 R1, Base Elements and Shafts, B11-128, P1-212 (Panel)
B13-127, R1, R1-226 (Rear)
76-1 (Switch)

RESISTORS

ITEM No.	RATING OHMS	RATING WATTS	REPLACEMENT DATA Stewart-Warner PART No.	IRC PART No.	NOTES
R1	10KΩ	½			
R2	1000Ω	½		BTS-1000	
R10	47KΩ	½		BTS-47K	
R11	22KΩ	½		BTS-22K	
R12	270KΩ	½		BTS-270K	
R13	180KΩ	½		BTS-180K	
R14	220Ω	½		BTS-220	
R15	470Ω	½			
R16	10KΩ	½			
R17	3300Ω	½			
R18	33KΩ	½		BTS-33K	
R19	15KΩ	½			
R20	100KΩ	½			
R21	100KΩ	½			
R22	100KΩ	½			
R23	330Ω	½			
R24	100Ω	½	510118	BTS-100	
R25	4700Ω	2	510248	BTS-4700	
R26	2.2Meg	½	510714	BTS-3.3Meg	
R27	330KΩ	½	510181	BTS-330K	
R28	220KΩ	½	510179	BTS-220K	
R29	100KΩ	½	510172	BTS-100K	
R30	680Ω	½	510151		
R31	47Ω	½	510166		
R32	470Ω	½	510130	BTS-470	
R33	47Ω	½	510112	BTS-47	

ITEM No.	RATING OHMS	RATING WATTS	REPLACEMENT DATA Stewart-Warner PART No.	IRC PART No.	NOTES
R34	100KΩ	½	510172		
R35	100KΩ	½	510172		
R36	330Ω	½	510166		
R37	470Ω	½	510130	BTS-470	
R38	47Ω	½	510112	BTS-47	
R39	470Ω	½	510130	BTS-470	
R40	150Ω	½	510121	BTS-150	
R41	3300Ω	½	510145	BTS-3300	
R42	8200Ω	½	510153	BTS-8200	
R43	3900Ω	½	510247	BTA-3900	
R44	8200Ω	½	510153	BTS-8200	
R45	1Meg	½	510190	BTS-1Meg	
R46	100Ω	½	510166	BTS-100	
R47	220KΩ	½	510178	BTS-220K	
R48	33KΩ	½	510163	BTS-33K	
R49	150KΩ	½	510174	BTS-150K	
R50	560KΩ	½	510186	BTS-560K	
R51	1800Ω	½	510241	BTA-1800	
R52	33KΩ	½	510163	BTS-33K	
R53	18KΩ	½	510159	BTS-18K	
R54	1000Ω	½	510136	BTS-1000	
R55	120Ω	½	510120	BTS-120	
R56	22KΩ	½	510180	BTS-22K	
R57	220Ω	½	510124	BTS-220	
R58	18KΩ	½	510159	BTS-18K	
R59	68KΩ	½	510169	BTS-68K	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATTS	REPLACEMENT DATA Stewart-Warner PART No.	IRC PART No.	NOTES
R60	2300Ω	½	510124	BTS-220	
R61	10Meg	½	510197	BTS-10Meg	
R62	470KΩ	½	510184	BTS-470K	
R63	560KΩ 5%	½	510716	BTS-560K 5%	
R64	830KΩ 5%	½	510747	BTS-820K 5%	
R65	100Ω	½	510742	1 9A-.4%	
R66	47KΩ	½	510168	BTS-47K	
R67	2.7Meg 5%	½	510173	BTS-2.7Meg 5%	
R68	18KΩ	½	510159	BTS-18K	
R69	2.2Meg	½	510193	BTS-2.2Meg	
R70	22KΩ	½	510180	BTS-22K	
R71	220KΩ	½	510178	BTS-220K	
R72	82KΩ	½	510171	BTS-82K	
R73	10Meg	½	510197	BTS-10Meg	
R74	33KΩ	½	510163	BTS-33K	
R75	18KΩ	½	510159	BTS-18K	
R76A	22KΩ	½		BTS-22K	
B	8300Ω	½	◆ 5008662	BTS-3300	
C	8300Ω	½		BTS-8300	
R77	1.2Meg 5%	½	510777	BTS-1.2Meg 5%	
R78	1200Ω	½	510175	BTS-1200	
R79	470KΩ	½	510184	BTS-470K	
R80	330KΩ	½	510181	BTS-330K	
R81	56KΩ	½	510169	BTS-56K	
R82	8300Ω	½	510183	BTS-8300	
R83	2.2Meg	½	510193	BTS-2.2Meg	
R84	390Ω	½	510139	BTS-390	
R85	56KΩ	½	510169		
R86	560Ω	½	510133		
R87	4700Ω	½	510248		

◆ Items C75A, C75B, C75C, C75D, C76A, R76B, R76C are combined in one unit.

TRANSFORMER (POWER)

ITEM No	USE	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Stewart-Warner PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No	Tried PART No
T1		117VAC	650VCT	5VAC	6.3VAC	520951		P-3391 ①			
		@ 1.47A	@ 180ADC	@ 3A	@ 3A			②			
					SEC. 1			③			
					12.6VCT			④			
					@ 2.3A						

① Mount tip side of chassis.
② Tape 6.3V @ .8A winding.
③ Series 8.5V for secondary #4.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	Stewart-Warner PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T2	Vert. Osc. Trans.	520980	B6702	A-3009	209T1 ①	V606	A-8135	28A52	A-97X
T3	Horiz. Output Trans.	523975		FB418 *①	HYO-36 *	209T1 *①	V394 *①	A-8355 *	FLY-18 *	D-90 *①
		523087 ②						①		
T4	Vert. Output Trans.	520975 ①		Z1900 ①②	A-3019 ①		V305 ④	A-8143 ①	28S53 ①	A-92X ④
T4A	Yoke (90°) Horiz.	523087 ①		MDF-28		255DJ ①	T90F19/43	DY-18A	Y-38 ①④	Y-61-1
		(2.5MH)		①		①	①	①		①
B	Vert. (34MH)									
T5	Width Coil (3.6-34MH)	508667 ①	RF800 ①	MWC-1	214R1 ①	20JR14 ①	WC-5 ①	WC-20	WC-11	
	6 AFC Sec. (3.5-11MH)			①		① ④	①	① ④	① ④	

① Drill new mounting hole(s).
② Alternate horizontal output transformer.
③ Includes connectors for deflection yoke leads.
④ Connect as auto transformer.
⑤ Use 10 to 1 turns ratio.
⑥ Includes resistors R85 and R86, yoke rear cover and centering device (Stewart-Warner part #521267).
⑦ Use original rear cover and centering device.
⑧ Use original horizontal yoke damping network.
⑨ Includes cure and mounting clip (Stewart-Warner part #508784), mounting clip only (part #504690).
⑩ Connect terminals #1 and #2 to transformer, terminals #3 and #4 to AFC network.
⑪ If the picture is out of phase, reverse primary or secondary connections.
⑫ Connect red and blue terminals to transformer, terminals "A" and "B" to AFC network.
⑬ Connect terminals "C" and "E" to transformer, terminals "A" and "B" to AFC network.
⑭ Connect inner winding to transformer, outer winding to AFC network.
⑮ Connect terminals #3 and #4 to transformer, terminals #1 and #2 to AFC network.

* HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Tried Replacement Connections
8	9	9	9	8	8	9	8
6	5	5	5	3	3	5	5
4	NC See Note 16	NC See Note 16	NC See Note 16	NC See Note 16	NC See Note 16	NC See Note 16	NC See Note 16
3	3	3	3	2	2	3	3
2	1	1	1	1	4	1	1
Convert Width Coil Across	3 & 2	3 & 1	3 & 1	3 & 1	3 & 1	3 & 4	3 & 1	3 & 1
Special Note:								
	16	16	16	16	16	16	16	16

16 Remove brown lead of yoke from terminal strip on vertical output transformer and connect to junction R106 and black lead from horizontal output transformer (original terminal #4 lead).

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Stewart-Warner PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	NOTES
T7	4.3KΩ	2.4Ω	509376	21U7	A-3980	A-3877	23S46	S-3X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V C IMP	REPLACEMENT DATA Stewart-Warner PART No	REPLACEMENT DATA QUAM PART No	NOTES
SP1	6"x 9"	PM	3.4Ω	523117 ①	6QA2	① Used in Models 21C-9740L, 21C-9740W, 21C-9740Z.
	6"x 9"	PM	3.4Ω	508176 ②	6QA2	② Alternate speaker.
	6"	PM	3.4Ω	509398 ③	6A1	③ Used in Models 21T-9740E, 21T-9740R and 21T-9740RB

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stewart-Warner PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Ant. Coil	0Ω						
L2	UHF Ant. Coil	0Ω						
L3A	UHF Ant., Mixer, Osc. Coils	0Ω		523451				Channels 14 thru 19
B	UHF Ant., Mixer, Osc. Coils	0Ω		523452				Channels 20 thru 29
C	UHF Ant., Mixer, Osc. Coils	0Ω		523453				Channels 30 thru 36
D	UHF Ant., Mixer, Osc. Coils	0Ω		523454				Channels 40 thru 49
E	UHF Ant., Mixer, Osc. Coils	0Ω		523455				Channels 50 thru 59
F	UHF Ant., Mixer, Osc. Coils	0Ω		523456				Channels 60 thru 69
G	UHF Ant., Mixer, Osc. Coils	0Ω		523457				Channels 70 thru 79
H	UHF Ant., Mixer, Osc. Coils	0Ω		523458				Channels 80 thru 83
L4	UHF Mixer Coil	0Ω						
L4A	Fil. Choke	0Ω						
B	Fil. Choke	0Ω						
L5	Cathode Choke	0Ω						
L7A	VHF Ant. Coil	00CT	0Ω	523402				Channel 2
B	VHF Ant. Coil	00CT	0Ω	523403				Channel 3
C	VHF Ant. Coil	00CT	0Ω	523404				Channel 4
D	VHF Ant. Coil	00CT	0Ω	523405				Channel 5
E	VHF Ant. Coil	00CT	0Ω	523406				Channel 6
F	VHF Ant. Coil	00CT	0Ω	523407				Channel 7
G	VHF Ant. Coil	00CT	0Ω	523408				Channel 8
H	VHF Ant. Coil	00CT	0Ω	523409				Channel 9
I	VHF Ant. Coil	00CT	0Ω	523410				Channel 10
J	VHF Ant. Coil	00CT	0Ω	523411				Channel 11
K	VHF Ant. Coil	00CT	0Ω	523412				Channel 12
L	VHF Ant. Coil	00CT	0Ω	523413				Channel 13
L8	UHF IF Coil	0Ω	.3Ω					
L9	Neut. Coil	0Ω						
L10A	VHF RF Mixer Grid, Osc. Coils	0Ω		523423				Channel 3
B	VHF RF, Mixer Grid, Osc. Coils	0Ω		523423				Channel 3
C	VHF RF, Mixer Grid, Osc. Coils	0Ω		523424				Channel 4
D	VHF RF, Mixer Grid, Osc. Coils	0Ω		523424				Channel 5
E	VHF RF, Mixer Grid, Osc. Coils	0Ω		523426				Channel 6
F	VHF RF, Mixer Grid, Osc. Coils	0Ω		523427				Channel 7
G	VHF RF, Mixer Grid, Osc. Coils	0Ω		523428				Channel 8
H	VHF RF, Mixer Grid, Osc. Coils	0Ω		523429				Channel 9
I	VHF RF, Mixer Grid, Osc. Coils	0Ω		523430				Channel 10
J	VHF RF, Mixer Grid, Osc. Coils	0Ω		523431				Channel 11
K	VHF RF, Mixer Grid, Osc. Coils	0Ω		523432				Channel 12
L	VHF RF, Mixer Grid, Osc. Coils	0Ω		523433				Channel 13
L11	UHF IF Coil	.2Ω	0Ω					
L13	UHF IF Coil	.3Ω						
L12	Fil. Choke	0Ω						
L14	Conv. Plate	.1Ω						
L15	1st Video IF	2.8Ω		522560				Tapped @ 2.7Ω
L16	2nd Video IF	.1Ω	.1Ω	522579		17-5002 *	TV-137 *	6233 *
L17	3rd Video IF	.1Ω	.1Ω	522579		17-5003 *	TV-138 *	6233 * Includes 47.25MC Trap
L18	Shunt Peaking Coil	10.5Ω		530689		19-3180	TV-134	6154	196 Microhenries
L19	Series Peaking Coil	7.9Ω		530984		19-3125		6153	130 Microhenries
L20	4.5MC Trap	1.7Ω		509809		20-1004	TV-131	1469	Core Part No. 507387
L21	Series Peaking Coil	10.5Ω		530689		19-3180	TV-134	6154	196 Microhenries
L22	Shunt Peaking Coil	13Ω		509941		19-3280	TV-135	6121	260 Microhenries
L23	Sound IF	1Ω		509378		16-3445 ▲	TV-113 ▲	1470-A	
L24	Ratio Det.	4Ω	.6ΩCT	509708		17-3493	TV-115 ■	1496	Tertiary Windings 4Ω

◆ Detune trap & use adaptor plate.
■ Use adaptor plate.
▲ Use one winding only.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stewart-Warner PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No	Thordarson PART No.	NOTES
L25	24Ω	85Ω	522519		20-1403 ◆	TV-163 ◆	6185 ◆	305R1 ◆		RS-3 ◆	Wave form winding 47Ω Core Part No. 521064.

◆ Reverse coil mounting in can.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Stewart-Warner PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L26	.180ADC	73Ω	2.9HY	508341	C5030	C-2991①	C-2325①	26C44	C-17X

① Drill one new mounting hole.

FUSES

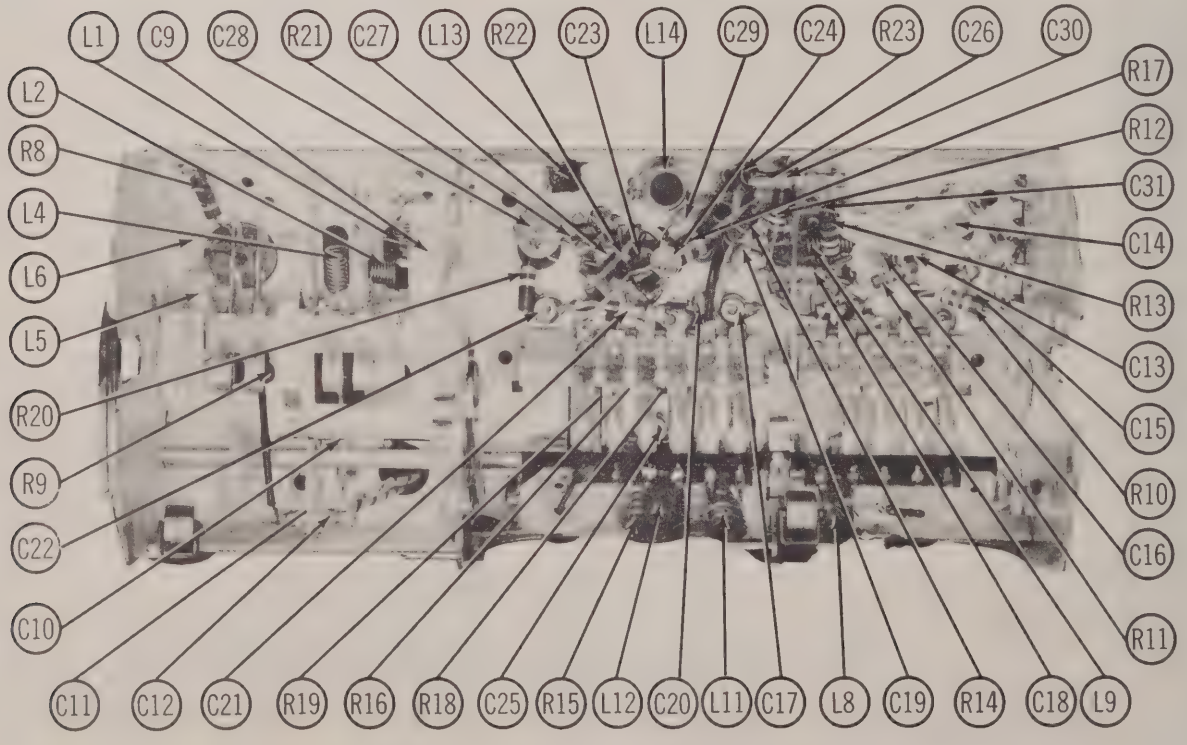
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Stewart-Warner PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	4A 125V	521803		313004. (3AG S/B 4A)	357002	MDX4	4408
M2	3AG	1/4A 250V	508713		312. 250 (3AG 1/4A)	357002	AGC 1/4	4408

CRYSTAL DIODES

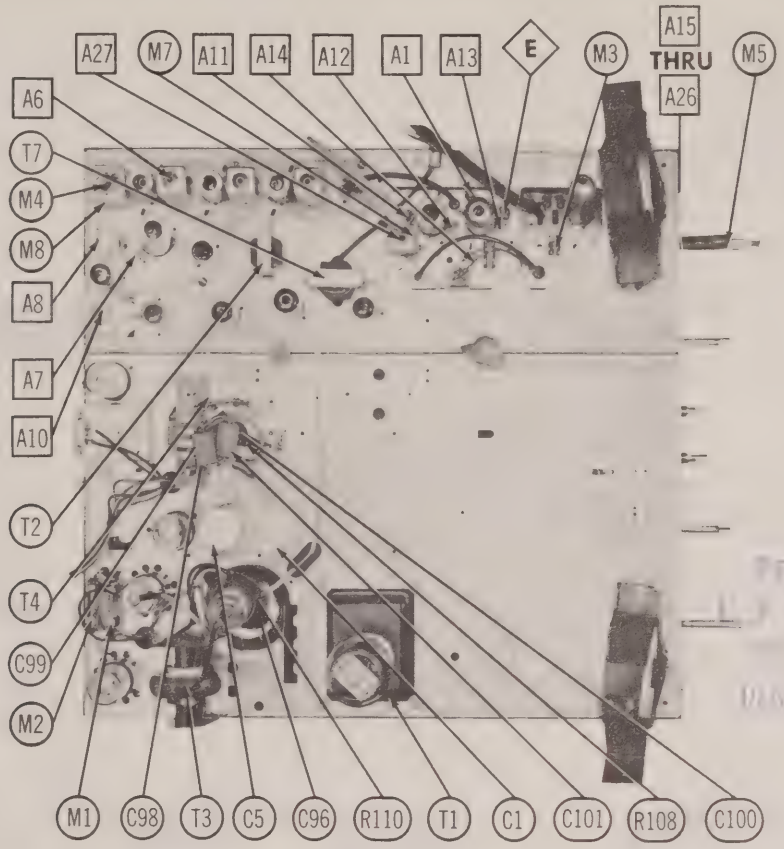
ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		Stewart-Warner PART No.	SYLVANIA PART No.	
M3	1N82	521819	1N82 or 1N82A	UHF Mixer
M4	1N64	509386	1N60 or 1N132	Video Det.

MISCELLANEOUS

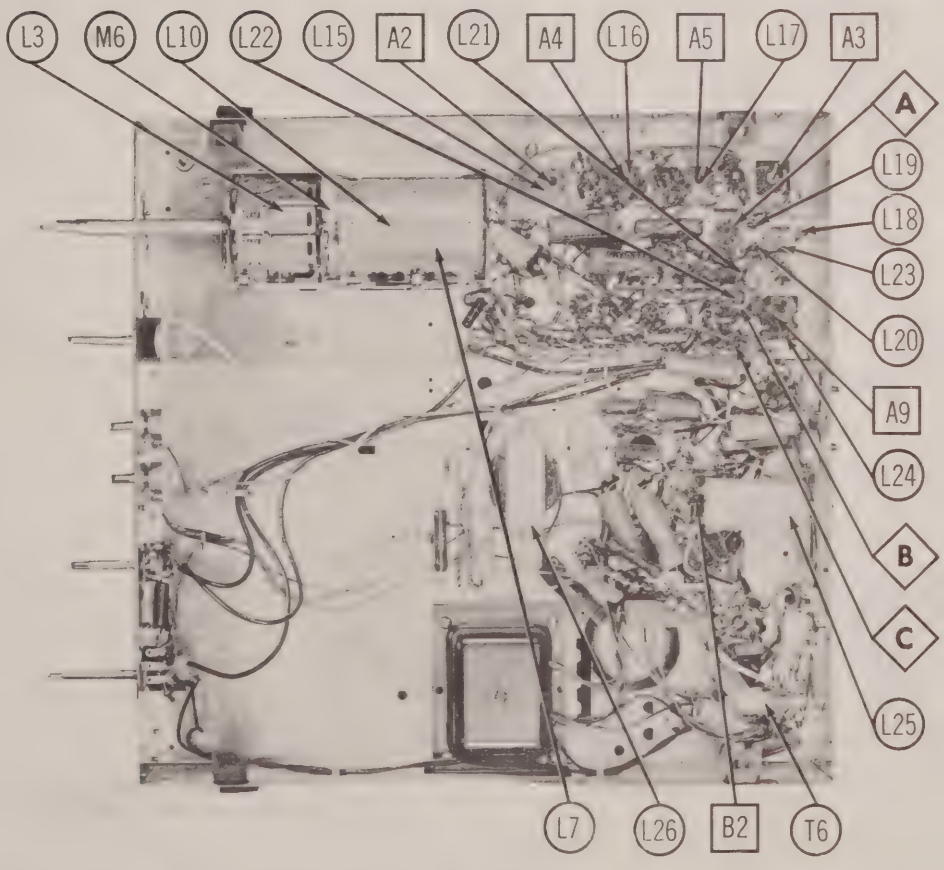
ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M5	Dial Light	118921	#47
M6	Tuner	521150-A	VHF-UHF
M7	Trap		VHF Ant. Input Filter
M8	Video Det. Assy.	522581	Includes M4, coils and capactors
M9	Centering Device	521267	Includes deflection yoke (T5) rear cover
M10	Ion Trap	523085	
B3	Trimmer Cap.	508071	Horizontal Drive (10-160MMF)
	Cabinet	522251	Model 21C-9740L
	Cabinet	522901	Model 21C-9740W
	Cabinet	522902	Model 21C-9740WB
	Cabinet	522361	Model 21C-9740X
	Cabinet	522196	Model 21T-9740A
	Cabinet	522981	Model 21T-9740R
	Cabinet	522982	Model 21T-9740RB
	Knob	521983	Brightness
	Knob	521911	Fine tuning
	Knob	521134	Horiz. & vert. hold
	Knob	521982	On-off-volume
	Knob	520740-D	Tone or power booster
	Knob	521981	VHF channel selector
	Knob	521980	UHF channel selector
	Safety Glass	522756	Models 21C-9740L, 21C-9740X, 21T-9740A
	Safety Glass	522968	Models 21C-9740W, 21C-9740WB, 21T-9740R, 21T-9740RB
	Mask	522971	Models 21C-9740L, 21C-9740W, 21C-9740X, 21T-9740R
	Mask	522972	Models 21C-9740WB, 21T-9740RB
	Mask	522645	Model 21T-9740A



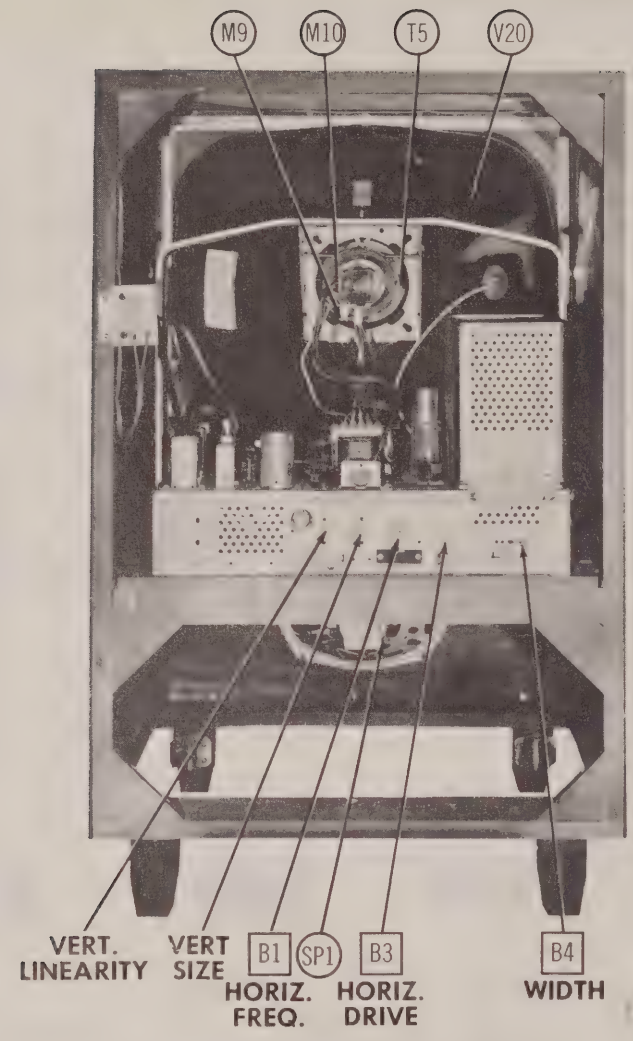
RF TUNER BOTTOM VIEW



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENT.



CABINET—REAR VIEW

DENVER, COLORADO

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

① Set the horizontal hold control to its fully clockwise position.

② Turn the horizontal frequency slug (B1) and the horizontal waveform slug (B2) fully counter clockwise.

③ Connect a short jumper across terminals "C" and "D" of the horizontal oscillator transformer (L25).

④ Set the horizontal drive trimmer (B3) one half turn from its fully clockwise position.

⑤ Adjust B1 clockwise until picture falls in sync.

⑥ Remove jumper from L25 and adjust B2 clockwise until picture again falls in sync.

⑦ Connect the high side of vertical amplifier input of scope thru 10MMF to terminal "C" of L25. Connect the low side to chassis. Adjust B2 for waveform similar to Fig. 7. If necessary keep the picture in sync while adjusting B2 by turning the horizontal hold control counter clockwise. Remove scope from terminal "C" of L25.

⑧ Turn the horizontal hold control counter clockwise and adjust B1 until picture locks in horizontally and does not lose sync when switching off channel and back again. Turn B1 slowly counter clockwise until picture is just ready to lose sync.

⑨ Horizontal holding action should be as follows:
(A) With horizontal hold control fully counter clockwise switch off channel and back again. Picture may be just out of sync.

(B) With horizontal hold control fully clockwise picture may lose sync when switching off channel and back again.

(C) With horizontal hold control at or near its mid-range position, picture should remain in sync when switching off channel and back again.

Adjust the horizontal drive trimmer (B3) counter-clockwise as far as possible without the presence of vertical white lines or compression near the center of the picture.

Adjust the horizontal width slug (B4) for a picture slightly wider than necessary to fill the picture mask horizontally.

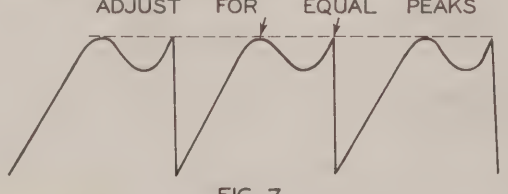


FIG. 7

TRADE NAME	Stromberg-Carlson Model AWP-8
MANUFACTURER	Stromberg-Carlson Co., Service Dept., 1700 University Ave., Rochester 10, N. Y.
TYPE SET	Three Power Portable Multi-band AM Superheterodyne Receiver
TUBES (Six)	Types 1U4 RF Amp., 1L6 Converter, 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Output, 50A1 Ballast
POWER SUPPLY	105-125 Volts AC-DC (220 Volts AC-DC Using Adapter) (or) 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.15 Amp. @ 117 Volts AC (or) 70MA @ 9 Volts DC & 15MA @ 90 Volts DC

TUNING RANGES

BAND 1	Broadcast 540-1600KC	BAND 5	31 Meters 9.22-10.4MC
BAND 2	16 Meters 17.32-18.4MC	BAND 6	100 Meters 1.8-3.9MC
BAND 3	19 Meters 14.62-15.8MC	BAND 7	50 Meters 3.9-8.0MC
BAND 4	25 Meters 11.42-12.3MC	BAND 8	LONG WAVE NAVIGATION 155-410KC

DISASSEMBLY INSTRUCTIONS

CAUTION—ALWAYS REMOVE CHASSIS FROM FRONT OF CABINET.

A—REMOVING CHASSIS FROM CABINET

1. Remove 4 chassis screws at bottom of cabinet.
2. Remove 2 rubber bumpers inside lower section of front cover.
3. Remove antenna disconnect plugs (loop and whip).
4. Reel in AC line cord.
5. Slide chassis out through front of cabinet.

B—REPLACING CONTROLS

1. Remove chassis as in A above.
2. Remove chassis bottom cover plate (3 snap fasteners at rear of chassis).
3. Remove all 4 knobs.
4. Remove barometer and thermometer by pushing out from rear with finger.
5. Remove two bottom screws and two front snap fasteners holding control panel in place.
6. Remove dial light switch and lift control panel off.

C—REPLACING BAND SWITCH INDICATOR DRIVE CORD

1. Perform A and B above.
2. Remove dial lamps and sockets. (Do not disconnect leads).
3. Remove upper dial trim strip using caution to disengage dial pointer. Set pointer at low frequency end of dial and slide trim strip off to the right. To replace, use the same method.
4. Remove dial end plates (brass) by removing two screws in each plate and sliding plates off towards the outer sides.
5. Remove 5 dial strips. Use thumb pressure to release spring catches.
6. Remove lower dial trim strip. Loosen 4 screws and slide strip upward.
7. Remove bracket and band pointer track and replace drive cord. (See dial stringing diagram).

D—REPLACING DIAL AND DRIVE CORD

1. Perform A, B, and C above.
2. Remove 3 metal screws at each end of speaker baffle plate.
3. Carefully move speaker baffle and speakers out of way. It is not necessary to disconnect speaker leads.
4. Re-string dial drive cable. (See dial stringing diagram). Do not re-install dial pointer at this time.
5. Re-assemble front panel less upper dial trim strip.
6. Re-install dial pointer and calibrate.
7. Replace upper dial trim strip as described in item 3 under Replacing Band Switch Indicator Drive Cord.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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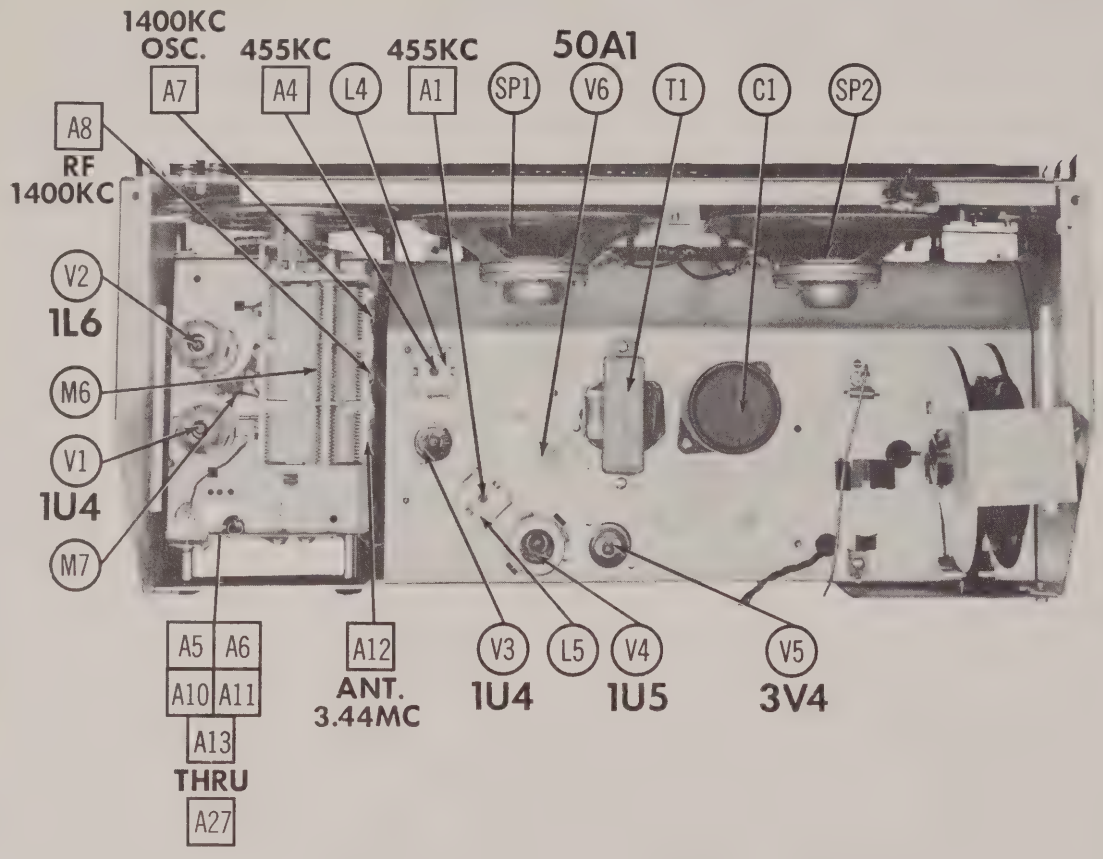
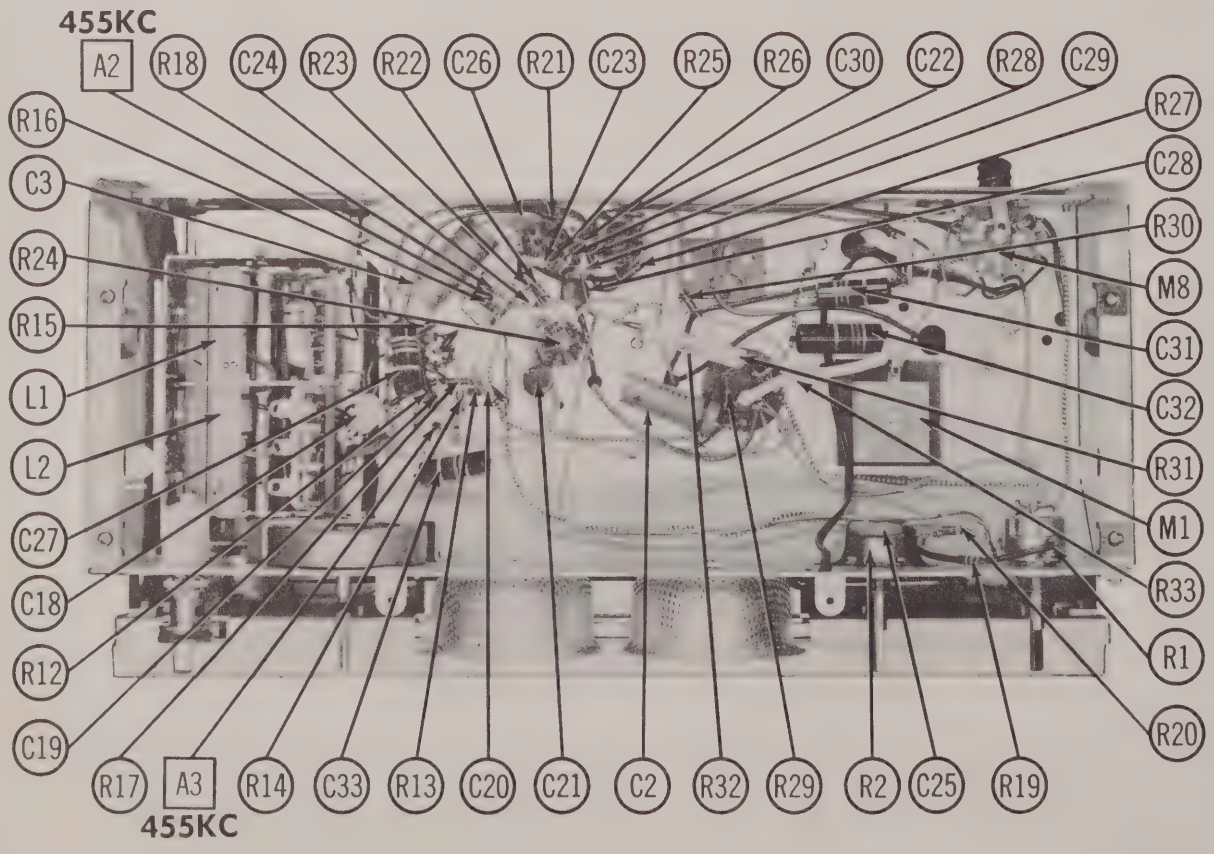
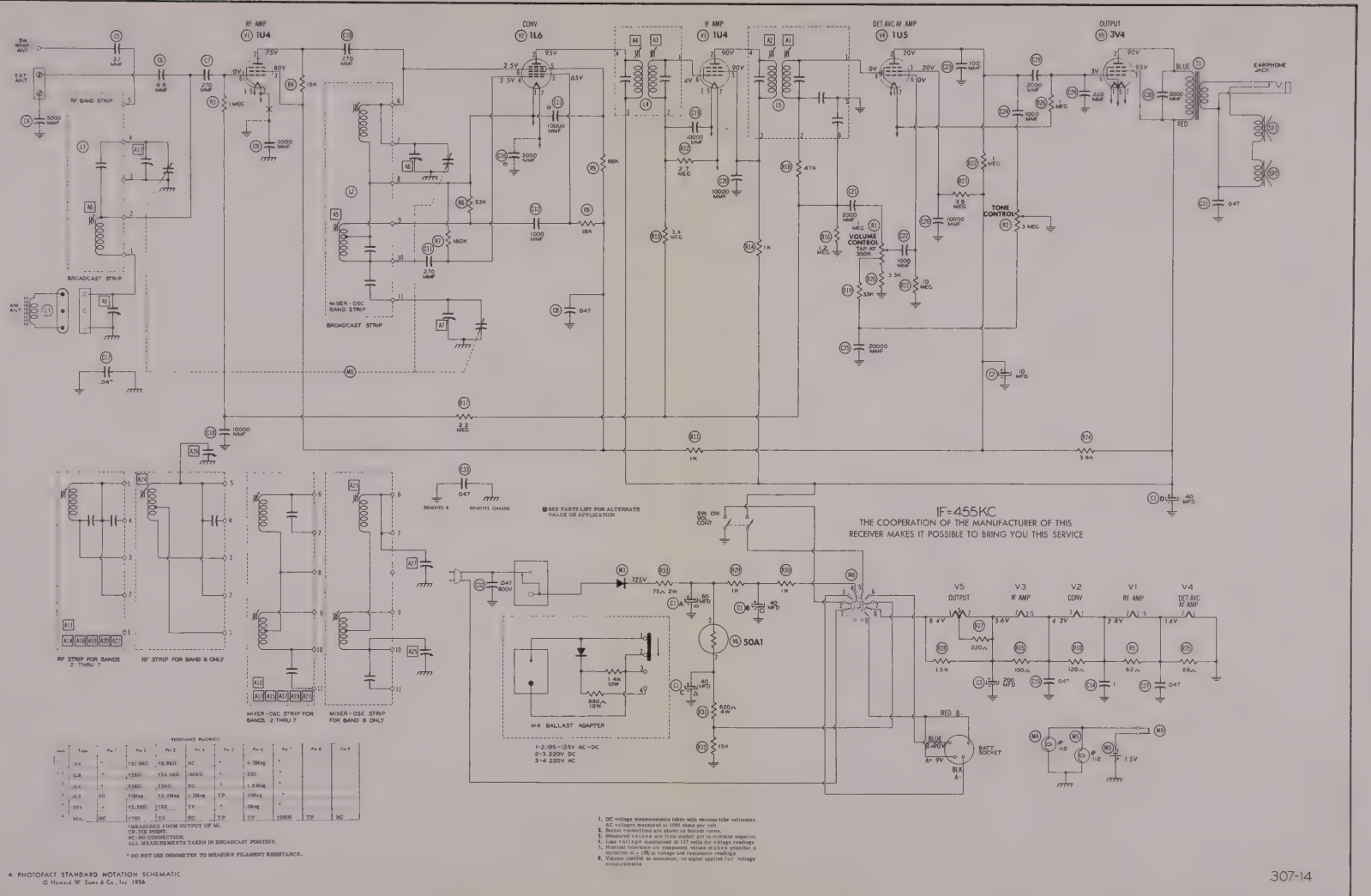


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW


RF AMP
V1 1U4
CONV
V2 1L6
IF AMP
V3 1U4
DET AVC AF AMP
V4 1U5
OUTPUT
V5 3V4
RF BAND STRIP
BROADCAST STRIP
MIXER-OSC BAND STRIP
BROADCAST STRIP
VOLUME CONTROL TAP AT 350K
TONE CONTROL
EARPHONE JACK
RED
BLUE
RF STRIP FOR BANDS 2 THRU 7
RF STRIP FOR BAND 8 ONLY
MIXER-OSC STRIP FOR BANDS 2 THRU 7
MIXER-OSC STRIP FOR BAND 8 ONLY
DENOTES B
DENOTES CHASSIS
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
SW ON VOL CONT
M4 BALLAST ADAPTER
1-2.105-125V AC-DC
2-3 220V DC
3-4 220V AC
50A1
IF=455KC
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
V5 OUTPUT
V3 IF AMP
V2 CONV
V1 RF AMP
V4 DET AVC AF AMP
BATT SOCKET
RESISTANCE READINGS
1 MEASURED FROM OUTPUT OF M1.
TP-TIE POINT.
NC-NO CONNECTION.
ALL MEASUREMENTS TAKEN IN BROADCAST POSITION.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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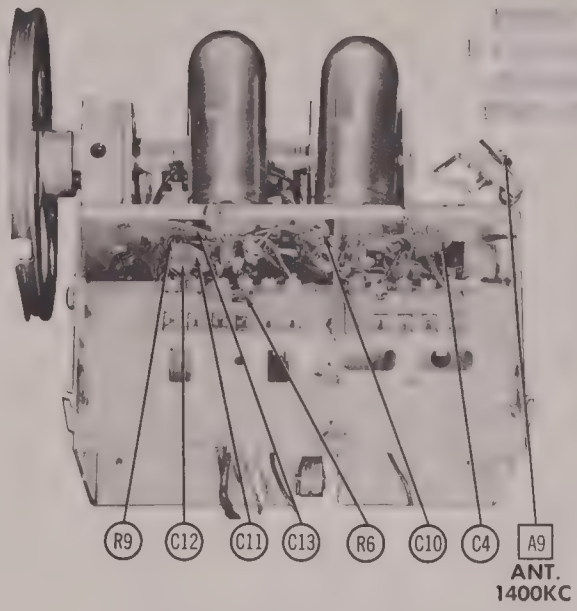
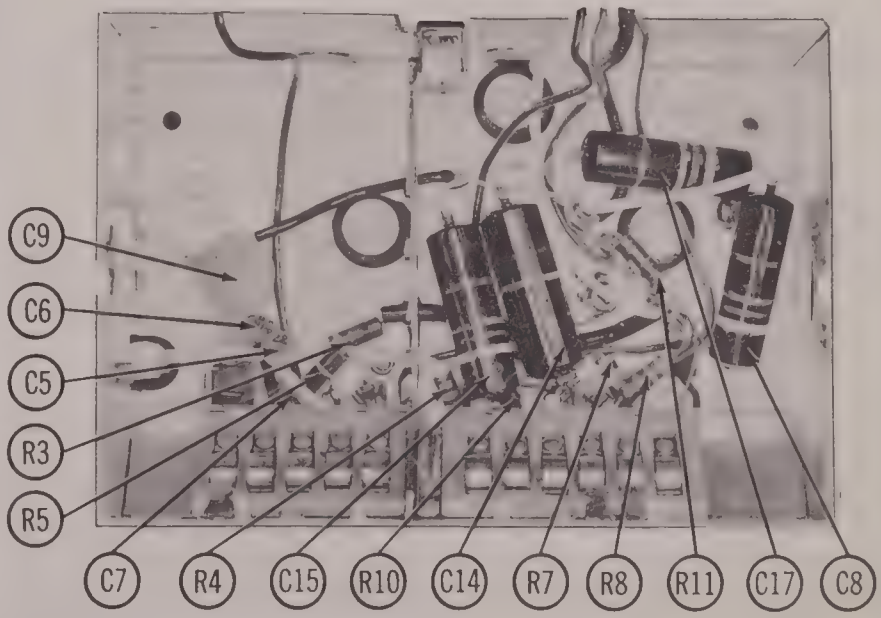


RF TUNER-LEFT SIDE



RF TUNER-BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
For Front Tuner Core Adjustments, remove 2 screws in right dial strip end plate. Slide plate to right to expose adjustment hole.
Antenna Core Adjustments are made thru opening at front of tuner.
Osc. Core Adjustments are made thru opening at rear of tuner.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to mixer section of tuning gang. Low side to B-.	455KC (400~ Mod.)	BC Band 1	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop (Direct)	600KC	"	600KC	"	A5, A6,	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	1400KC	"	A7, A8, A9	"
4.	Fig. 1	Antenna terminal thru dummy	1.87MC	SW Band 7	1.87MC	"	A10, A11	Adjust for maximum deflection.
5.	"	"	3.44MC	"	3.44MC	"	A12	Adjust for maximum deflection. Do not readjust A12 thru completion of alignment.
6.	"	"	4.0MC	SW Band 6	4.0MC	"	A13, A14	Adjust for maximum deflection
7.	"	"	7.0MC	"	7.0MC	"		Check for calibration. If necessary, slightly readjust A13, A14.
8.	"	"	9.23MC	SW Band 5	9.23MC	"	A15, A16	Adjust for maximum deflection.
9.	"	"	9.97MC	"	9.97MC	"		Check for calibration. If necessary, slightly readjust A15, A16.
10.	Fig. 1	"	11.42MC	SW Band 4	11.42MC	Across Voice Coil	A17, A18	Adjust for maximum deflection.
11.	"	"	11.99MC	"	11.99MC	"		Check for calibration. If necessary, slightly readjust A17, A18.
12.	"	"	14.63MC	SW Band 3	14.63MC	"	A19, A20	Adjust for maximum deflection.
13.	"	"	15.33MC	"	15.33MC	"		Check for calibration. If necessary, slightly readjust A19, A20.
14.	"	"	17.33MC	SW Band 2	17.33MC	"	A21, A22	Adjust for maximum deflection.
15.	"	"	17.86MC	"	17.86MC	"		Check for calibration. If necessary, slightly readjust A21, A22.
16.		Loop	169KC	LW Band 8	169KC	"	A23	Adjust for maximum deflection.
17.		"	370KC	"	370KC	"	A24	Adjust for maximum deflection. Repeat until no further improvement can be obtained.
18.		"	300KC		300KC	"	A25, A26 A27	Adjust for maximum deflection.

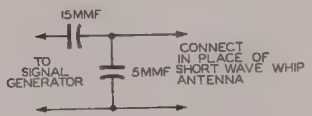


FIG 1

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amp.	1U4	1U4	6AR	
V2	Converter	1L6	1L6	7DC	
V3	IF Amp.	1U4	1U4	6AR	
V4	Det. -AVC-AF Amp	1U5	1U5	6BW	
V5	Audio Output	3V4	3V4	6BX	
V6	Ballast	50A1	50A1	9CM	

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▪80	150	111126		D001	FP359.1	TM-T40-150	Q-005	TVL-4575
B	▪40	150			BR3015	TC492	TD-80-150	FM-1530	TVA-1413
C	▲40	150							
D	40	150							
C2	10	100	111121	PRS150V10	BR1015	TC42	TD-10-150	FM-1512	TVA-1406
C3	200	10	111127	PRS12V250	BBR100-15 BBR100-15	TC1502	TD-250-15	MTH-1225	TVA-1131

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	5000		110586	BPD-005	DD-502	KO80	811-005	DC525	5HK-D5	
C5	22		110653				831-220			
C6	6.8		110671	NPO-D16.8	TCZ-6R8	ZO13	NPOA-6R8	ZT-5568	5TCCB-V68	
C7	270		171858	SI270	DD-271	TP41	811-271		5GA-T27	
C8	.047	200	110660	BPD-05	DF-503	CUB2547		PT4147	2TM-S47	
C9	5000		110586	BPD-005	DD-502	KO80	811-005	DC525	5HK-D5	
C10	270		171858	SI270	DD-271	TP41	811-271		5GA-T27	
C11	270		171858	SI270	DD-271	TP41	811-271		5GA-T27	
C12	1000		171227	BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C13	10000		110672	BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	Note 1
C14	.1	200	110661	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C15	.047	200	110660	BPD-05	DF-503	CUB2547		PT4147	2TM-S47	
C16	5000		110586	BPD-005	DD-502	KO80	811-005	DC525	5HK-D5	Note 2
C17	.047	200	110660	BPD-05	DF-503	CUB2547		PT4147	2TM-S47	
C18	10000		110672	BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C19	10000		110672	BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C20	10000		110672	BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C21	2000		110840	BPD-002	DD-202	KO72	801-002	DC522	5HK-D2	
C22	1000		110824	BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C23	100		110694	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C24	1000		110824	BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C25	20000		110773	BPD-03	DD-303	KO85	817-02	PT412	5HK-S2	
C26	10000		110672	BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C27	.047	400	110554	BPD-05	DD-503	CUB4547		PT4147	4TM-S47	
C28	2000		110840	BPD-002	DD-202	KO72	801-002	DC522	5HK-D2	
C29	220		110642	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C30	2000		110840	BPD-002	DD-202	KO72	801-002	DC522	5HK-D2	
C31	.047	400	110554	BPD-05	DF-503	CUB4547		PT4147	4TM-S47	
C32	.047	600	110559	BPD-06	DF-503	CUB6547		PT6147	6TM-S47	
C33	.047	400	110554	BPD-05	DF-503	CUB4547		PT4147	4TM-S47	

Note 1. Some versions may use a 1000MMF unit (Part No. 171227) in this application.
Note 2. Not used in some versions.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	INSTALLATION NOTES
R1A	1Meg	½	145188	BT-72-S	A47F-1Meg	Q13-137X	UT438	Volume tap at 350KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A.
C	Switch		Not Req.	Not Req.	SWE-20	76-2	US-27	Attach to R1A.
R2A	3Meg	½	145189	B-84	A47-3Meg-S	Q11-140	U-59	Tone
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	1Meg	½	28191	BTS-1Meg	
R4	15KΩ	½	28172	BTS-15K	
R5	82Ω	½	28145	BTS-82	
R6	33KΩ	½	28175	BTS-33K	
R7	180KΩ	½	28182	BTS-180K	
R8	18KΩ	½	28173	BTS-18K	
R9	68KΩ	½	28179	BTS-68K	
R10	120Ω	½	28147	BTS-120	
R11	1000Ω	½	28158	BTS-1000	
R12	2.7Meg 5%	½	28196	BTS-2.7Meg5%	
R13	3.9Meg 5%	½	28198	BTS-3.9Meg5%	
R14	1000Ω 5%	½	149101	BTS-1000 5%	
R15	100Ω 5%	½	149486	BTS-100 5%	
R16	1.2Meg 5%	½	28192	BTS-1.2Meg 5%	
R17	2.2Meg 5%	½	28195	BTS-2.2Meg5%	
R18	47KΩ 5%	½	149111	BTS-47KΩ 5%	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R19	33KΩ	½	149110	BTS-33K	
R20	3300Ω	½	149104	BTS-3300	
R21	10Meg	½	149125	BTS-10Meg	
R22	1Meg 5%	½	149119	BTS-1Meg 5%	
R23	3.9Meg 5%	½	28198	BTS-3.9Meg5%	
R24	3900Ω 5%	½	28165	BTS-3900 5%	
R25	68Ω 5%	½	149485	BTS-68 5%	
R26	1Meg 5%	½	149119	BTS-1Meg 5%	
R27	220Ω 5%	½	149484	BTS-220 5%	
R28	1500Ω 5%	½	149387	BTS-1500 5%	
R29	1000Ω 5%	½	149101	BTS-1000 5%	
R30	1000Ω 5%	½	149101	BTS-1000 5%	
R31	620Ω	4	149508		
R32	15KΩ 5%	½	149108	BTS-15K 5%	
R33	75Ω	2	149483		

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	7KΩ	3.4Ω	161287	Z1003	A-2901	A-3823	22S48	S-53X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	4"	PM	3.4Ω	155844	4A07	
SP2	4"	PM	3.4Ω	155844	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: MILLER PART No.	NOTES
L1A	Ant. Coil			171841				Band 1 (.54-1.6MC-BC)
B	Ant. Coil			171842				Band 2 (17.3-18.4MC-16M)
C	Ant. Coil			171843				Band 3 (14.6-15.7MC-19M)
D	Ant. Coil			171844				Band 4 (11.4-12.4MC-25M)
E	Ant. Coil			171845				Band 5 (9.2-10.4MC-31M)
F	Ant. Coil			171846				Band 6 (3.9-8MC-50M)
G	Ant. Coil			171847				Band 7 (1.8-3.9MC-100M)
H	Ant. Coil			171848				Band 8 (.18-.41MC-LW)
L2A	Osc. Coil			171849				Band 1 (.54-1.6MC-BC)
B	Osc. Coil			171850				Band 2 (17.3-18.4MC-16M)
C	Osc. Coil			171851				Band 3 (14.6-15.7MC-19M)
D	Osc. Coil			171852				Band 4 (11.4-12.4MC-25MC)
E	Osc. Coil			171853				Band 5 (9.2-10.4MC-31MC)
F	Osc. Coil			171854				Band 6 (3.9-8MC-50M)
G	Osc. Coil			171855				Band 7 (1.8-3.9MC-100M)
H	Osc. Coil			171856				Band 8 (.18-.41MC-LW)
L3	Ant. Coil	.2Ω		139064				
L4	Input IF	16Ω	16Ω	114364	16-6758	BC-352	12-C1	
L5	Output IF	16Ω	16Ω	114463	16-6758	BC-353	12-C2	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

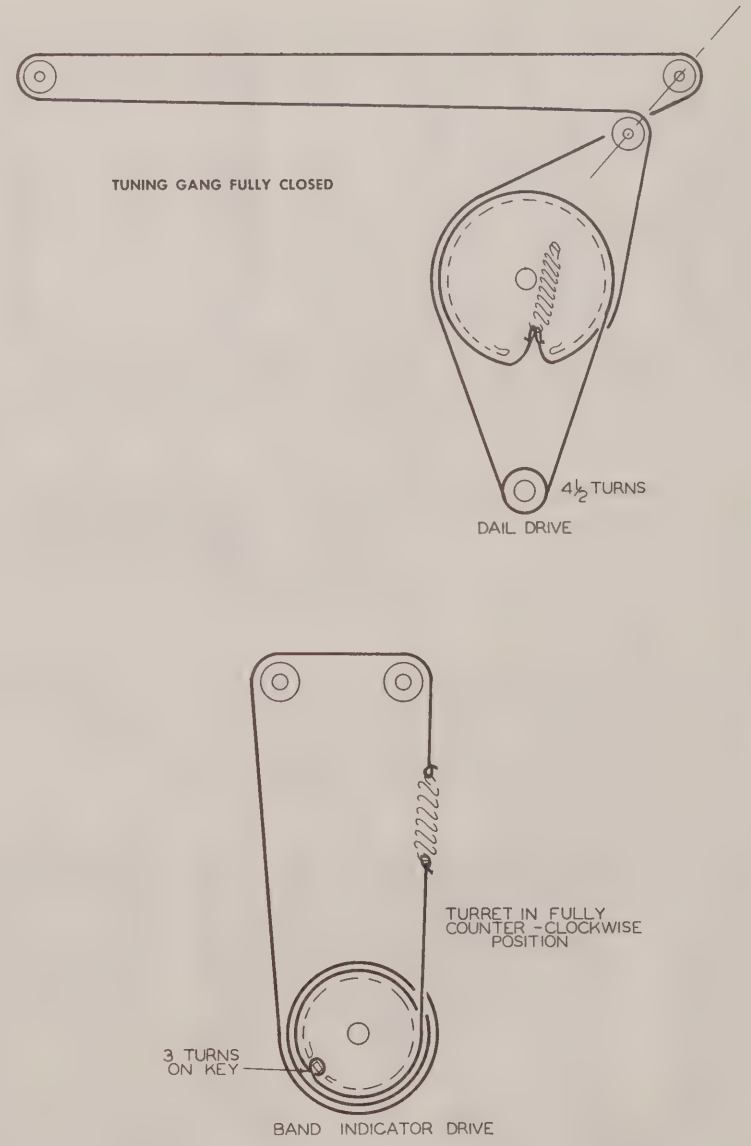
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	Stromberg-Carlson PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.072A	162205	1004A	RS100	6S100	5M1	100	

BATTERIES

ITEM No.	VOLTAGE	Stromberg-Carlson PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V"A" 90V"B"	141382			752			G6B60	
M3	1.5V (Dial Light)		950			2R			

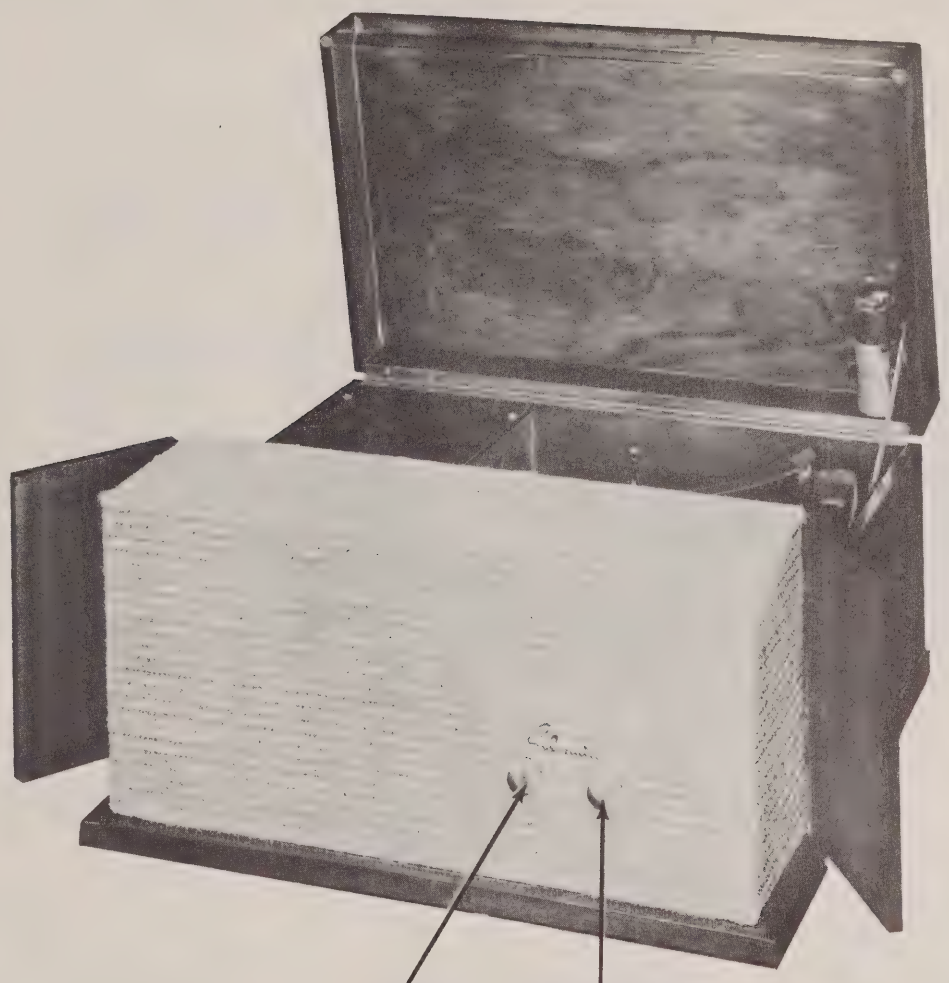
MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M4	Dial Light	137011	#112
M5	Dial Light	137011	#112
M6	Tuning Cap.	136-012	3 Gang (19-537MMF, 19-495MMF, 19-507MMF)
M7	Tuner	164045	8 Band-Complete
M8	Switch	158057	Power Changeover (3PDT-Rotary-Wafer Type)
M9	Switch	158056	Dial Light-Push Button type
M10	Whip Ant. Assy.	139066	
A25	Trimmer Cap.		Osc. Trimmer-Band 8 (.16-.41MC-Long Wave)
A27	Trimmer Cap.		Mixer Trimmer-Band 8 (.16-.41MC-Long Wave)
A26	Trimmer Cap.		Ant. Trimmer-Band 8 (.16-.41MC-Long Wave)
A9	Trimmer Cap.		Ant. Trimmer-Band 1 (.54-1.6MC-BC)
	Knob	134262	Control (4 Used)
	Dial Strip	122057	Band 1
	Dial Strip	122055	Bands 2 & 3
	Dial Strip	122054	Bands 4 & 5
	Dial Strip	122053	Bands 6 & 7
	Dial Strip	122056	Band 8
	Dial Pointer	144024	
	Pointer	144028	Band Indicator



DIAL CORD STRINGING

SYLVANIA
MODEL 918



SYLVANIA
MODEL 918

TRADE NAME	Sylvania Model 918
MANUFACTURER	Sylvania Electric Products, Inc., Radio & Television Div., 254 Rano St., Buffalo 7, N.Y.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Four)	Types: 12AX7 AF Amp.-Phase Inv., (2) 6V6GT Output, 6X5GT Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles RATING .43 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON THE RECORD CHANGER - SEE SIMILAR V-M MODEL 954B PHOTOFACT SET #302 - FOLDER 12.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

SYLVANIA
Model 918

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		SYLVANIA PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier-Phase Inverter	12AX7	12AX7	9A	
V2	Audio Output	6V6GT	6V6GT	7S	
V3	Audio Output	6V6GT	6V6GT	7S	
V4	Rectifier	6X5GT	6X5GT	6S	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲20	450	161-4017	AFH4-14	DO13	FP444	TM-Q20-450	Q-040	TVL-4763
B	■20	450							
C	▲20	450							
D	20	450							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	400	160-06147	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C3	.047	400	160-06147	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C4	.0022	400	160-06222	SI2200	D6-222	CUB6D22	GP2-333-222	UC-5222	6TM-D22	
C5	.0022	400	160-06222	SI2200	D6-222	CUB6D22	GP2-333-222	UC-5222	6TM-D22	
C6	.047	400	160-06147	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C7	.047	400	160-06147	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500KΩ	½	152-0029	AB-60	A47-500K-Z	Q13-133	U-48	Volume
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
R2A	1Meg	½	154-0012			Q11-137	UF16L	Tone
B	1Meg	½				M11-137	UR16L	Attach to R2A
C	Shaft						DS-36	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R3	5.6Meg	½	181-0565	BTS-5.6Meg	
R4	3900Ω	½	181-0392	BTS-3900	
R5	220KΩ	½	181-0224	BTS-220K	
R6	10KΩ	½	181-0103	BTS-10K	
R7	22KΩ	½	181-0223	BTS-22K	
R8	22KΩ	½	181-0223	BTS-22K	
R9	1Meg	½	181-0105	BTS-1Meg	
R10	1000Ω	½	181-0102	BTS-1000	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R11	220KΩ	½	181-0224	BTS-220K	
R12	220KΩ	½	181-0224	BTS-220K	
R13	470KΩ	½	181-0474	BTS-470K	
R14	200Ω	5	187-0031	PW7-200	
R15	470KΩ	½	181-0474	BTS-470K	
R16	100KΩ	½	181-0104	BTS-100K	
R17	470Ω	2	183-0471	BTB-470	
R18	12Ω	½		BTS-10	Note 1
R19	12Ω	½		BTS-10	Note 1

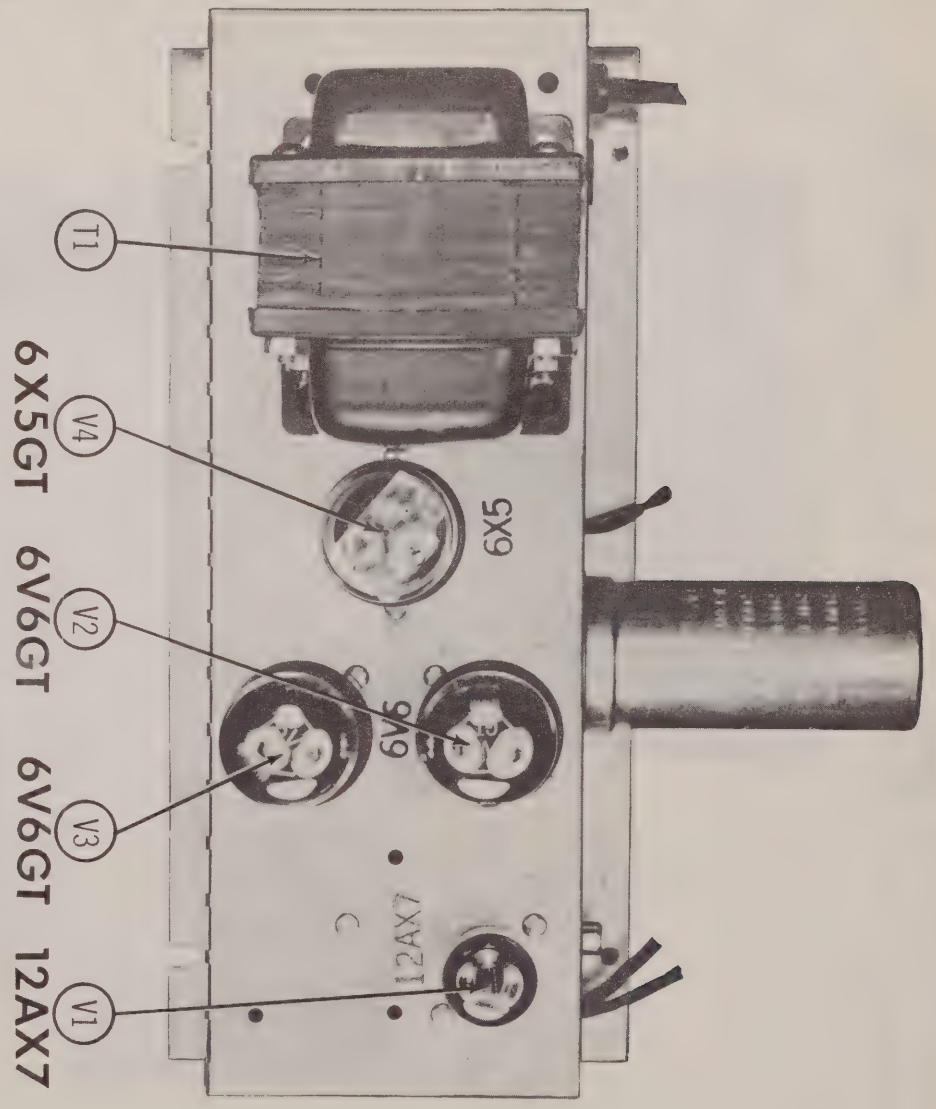
Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @.43A	540VCT .080ADC	6.3VCT @1.86A		141-0051	P9208①②		PC-8405 ① ②	26R31U①	R-12A①②

① Drill new mounting holes.
② Tape 5V winding.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6KΩCT	500Ω tap @ 16Ω, 8Ω, 4Ω	143-0042						

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	5 x 7"	PM	3.4Ω	539-5704	57A1	
SP2	5 x 7"	PM	3.4Ω	539-5704	57A1	
SP3	6 x 9"	PM	3.4Ω	539-6903	69A3	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SYLVANIA PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	916-0003	55-T	GD-J	47	0-1 or S-1 & 0-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

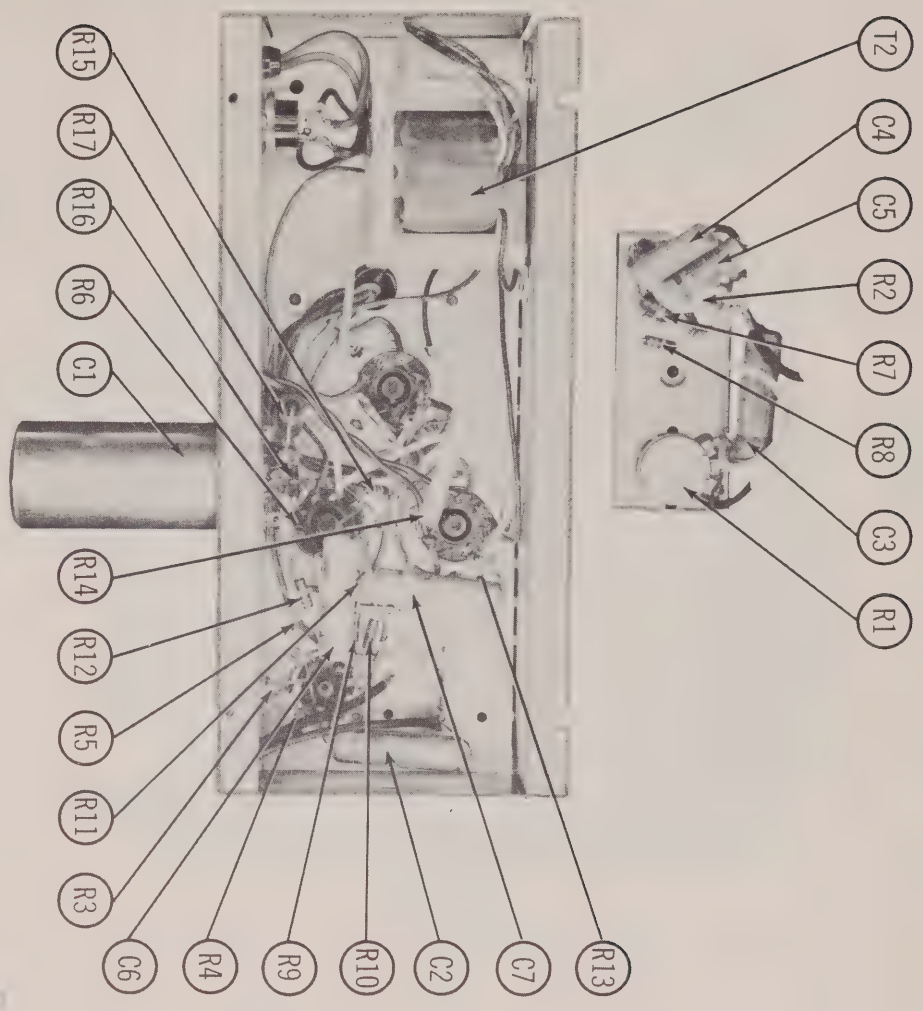
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

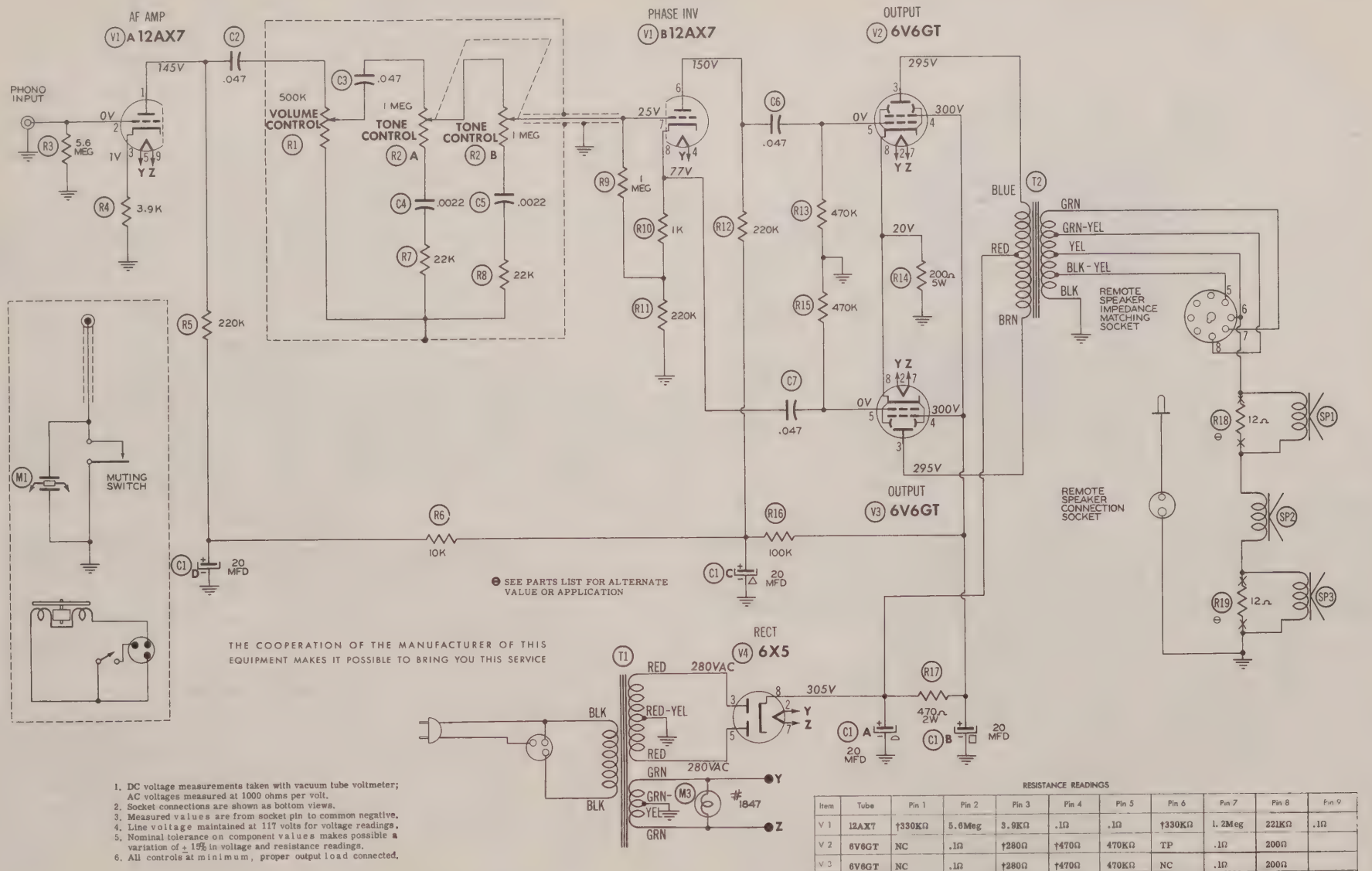
ITEM No.	REPLACEMENT DATA				REMARKS
	SYLVANIA PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2	902-0003	*S-67 or †S-66 or ♦†S-66SD or ♦S-66D	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D	†W-75TPS or ♦†W-75DS or ♦W-75TPD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M3	Pilot Light		#1847 - Some versions may use type #47 in this application (part #611-0047)
	Knob	740-0033	Volume and tone
	Knob	743-0033	Record changer - Reject
	Knob	743-0034	Record Changer - Speed Control

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†330KΩ	5.6Meg	3.9KΩ	.1Ω	.1Ω	†330KΩ	1.2Meg	221KΩ	.1Ω
V 2	6V6GT	NC	.1Ω	†280Ω	†470Ω	470KΩ	TP	.1Ω	200Ω	
V 3	6V6GT	NC	.1Ω	†280Ω	†470Ω	470KΩ	NC	.1Ω	200Ω	
V 4	6X5GT	NC	.1Ω	120Ω	NC	120Ω	NC	.1Ω	5Meg	

† MEASURED FROM PIN 8 OF V4.
NC - NO CONNECTION
TP - TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

TRUETONE MODEL
2D1511A (Ch. 21T29)

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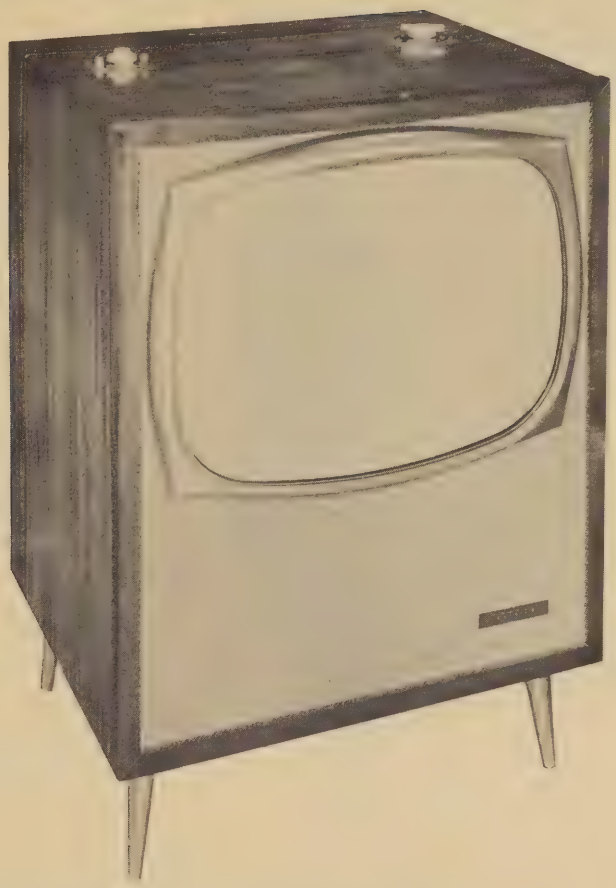

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TRUETONE MODEL
2D1511A (Ch. 21T29)

TRADE NAME	Truetone Model 2D1511A (Ch. 21T29)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Fifteen
POWER SUPPLY	105-115 Volts AC-60 Cycles — RATING 1.34 Amp. @ 115 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 26.75MC, Sound IF 22.25MC (Intercarrier)

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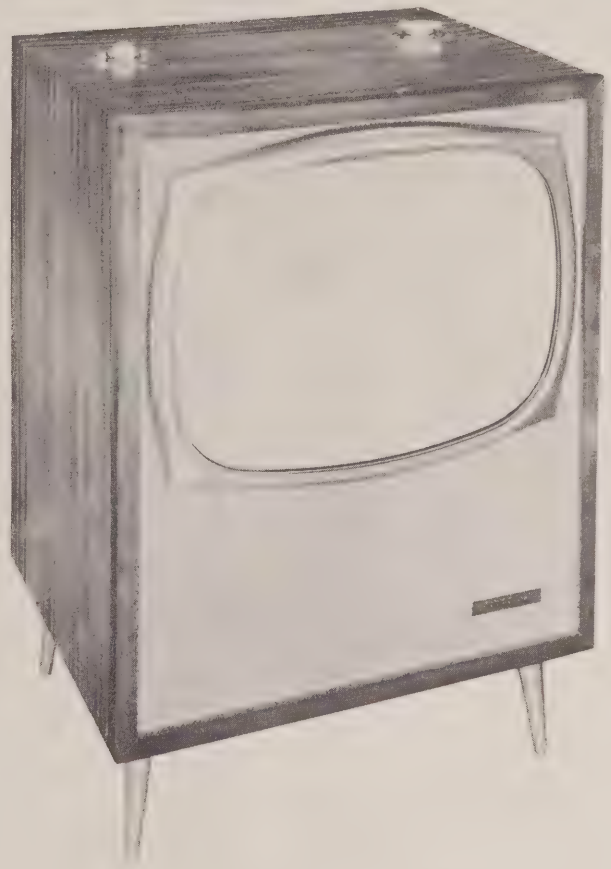

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from top panel of cabinet.

2. Remove 11 metal screws. Remove rear cover.

3. Remove 2 metal screws. Remove antenna and AC interlock bracket.

4. Disconnect speaker leads, HV lead, picture tube socket and yoke leads.

5. Remove 4 chassis bolts. Remove chassis.

6. Remove 4 speaker nuts. Remove speaker.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet above and slightly to the left of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to the set.
Adjustment is located on top of chassis.
Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the buzz control (R7) located on top of chassis for maximum volume and minimum buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

TRUETONE MODEL
2D1511A (Ch. 21T29)

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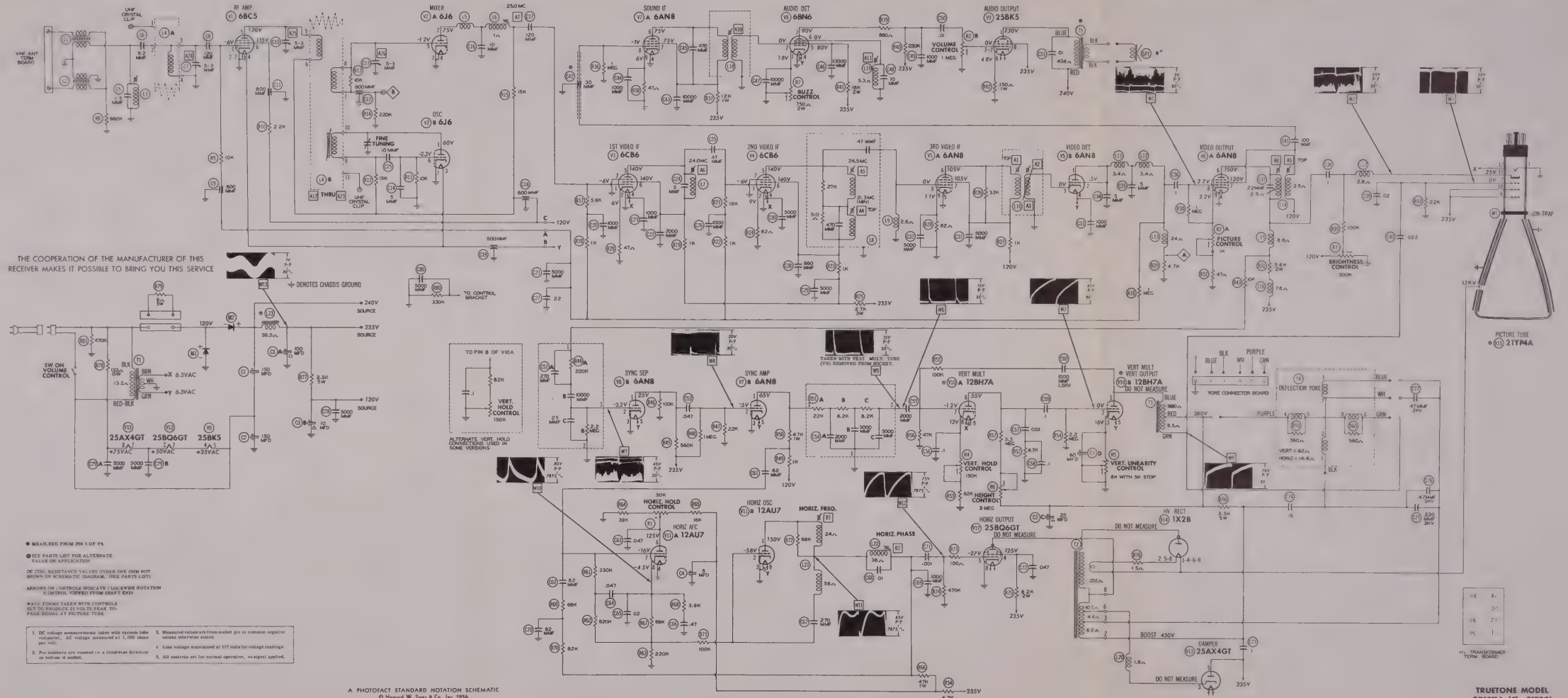
TRUETONE MODEL 2D1511A (Ch. 21T29)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
RED-BLK
25AX4GT
25BQ6GT
25BK5
RF AMP V1 6BC5
MIXER V2 A 6J6
OSC V2 B 6J6
SOUND IF V7 A 6AN8
AUDIO DET V8 6BN6
AUDIO OUTPUT V9 25BK5
VOLUME CONTROL
BUZZ CONTROL
1ST VIDEO IF V1 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 A 6AN8
VIDEO DET V5 B 6AN8
VIDEO OUTPUT V6 A 6AN8
PICTURE CONTROL
BRIGHTNESS CONTROL
PICTURE TUBE e 21YP4A
ION TRAP
SYNC SEP V6 B 6AN8
SYNC AMP V7 B 6AN8
VERT. HOLD CONTROL 150K
ALTERNATE VERT. HOLD CONNECTIONS USED IN SOME VERSIONS
TAKEN WITH VERT. MULT. TUBE (V10) REMOVED FROM SOCKET.
VERT MULT V10 A 12BH7A
VERT MULT V10 B 12BH7A DO NOT MEASURE
VERT. HOLD CONTROL 150K
HEIGHT CONTROL 3 MEG
VERT. LINEARITY CONTROL 6K WITH 5K STOP
YOKE CONNECTOR BOARD
DEFLECTION YOKE
HORIZ OSC V11 B 12AU7
HORIZ AFC V11 A 12AU7
HORIZ. HOLD CONTROL 50K
HORIZ. FREQ.
HORIZ. PHASE
HORIZ OUTPUT V17 25BQ6GT DO NOT MEASURE
HV RECT V14 1X2B
DO NOT MEASURE
BOOST 430V
DAMPER V13 25AX4GT
DO NOT MEASURE
HV TRANSFORMER TERM BOARD
TRUETONE MODEL 2D1511A (Ch. 21T29)
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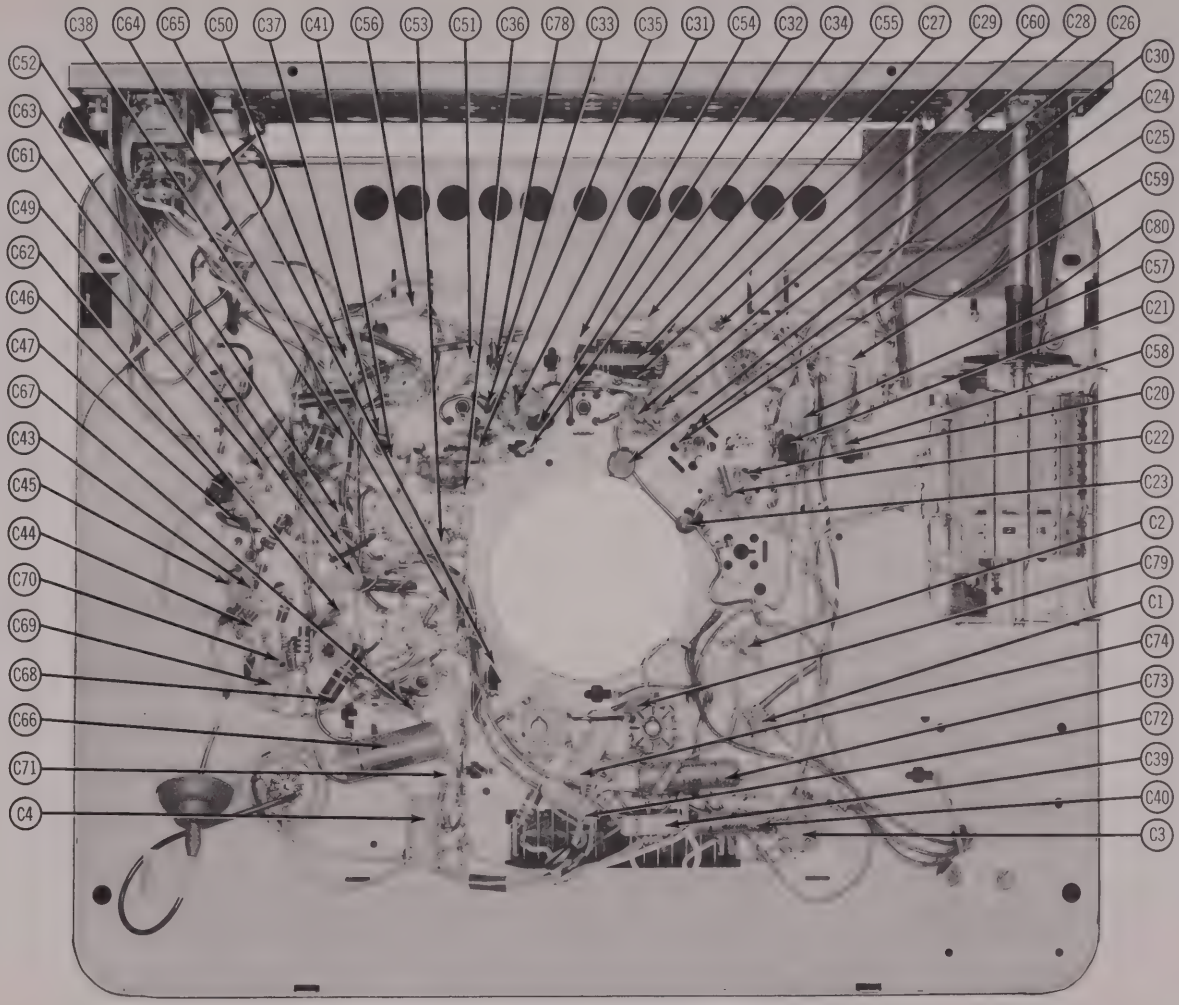
TRUETONE MODEL 2D1511A (Ch. 21T29)



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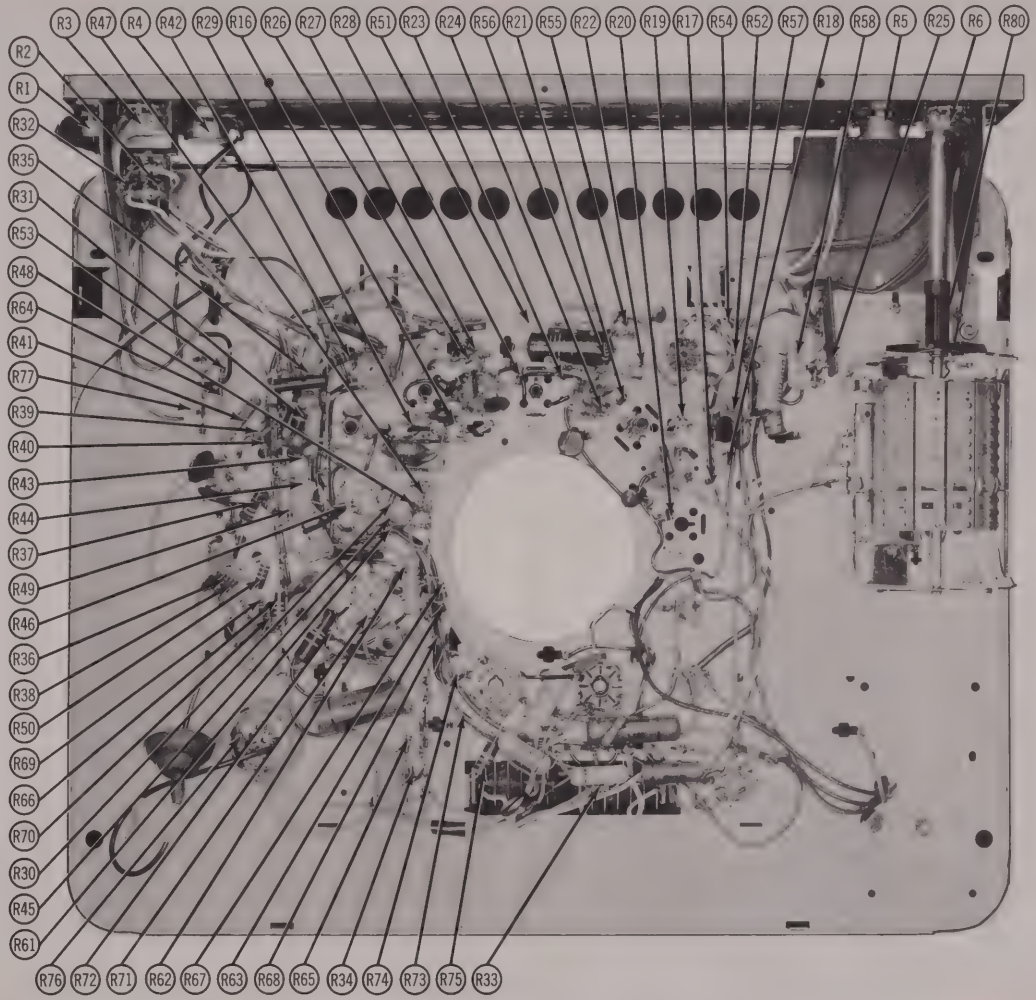
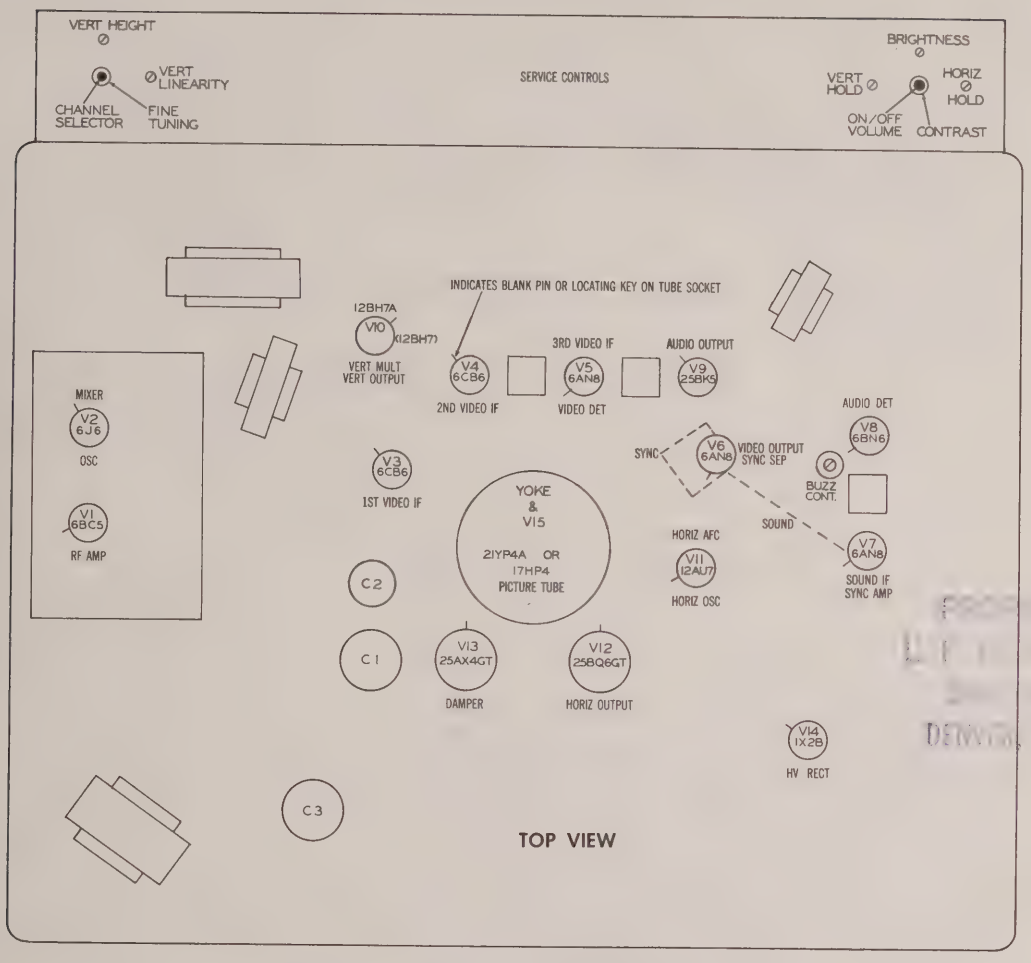
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

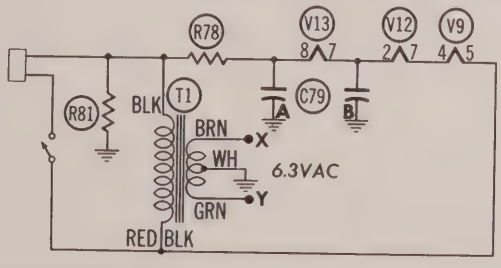
POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V15**
Has pic, no sound - **V7, V8, V9**

SYNC FAILURE
No vert. sync - **V7, V10**
No horiz. sync - **V7, V11**
No vert. or horiz. sync - **V7**

SWEEP FAILURE
No raster, has sound - **V11, V12, V13, V14, V15**
No vertical deflection - **V10**
Poor vert. linearity or foldover - **V10**
Poor horiz. linearity or foldover - **V11, V12, V13**
Narrow picture - **V11, V12, V13, V14, M1, M2**
Vert. off freq. - **V7, V10**
Horiz. off freq. - **V7, V11**

NOTE: Since this receiver employs tubes used in series parallel filament network, an open filament in any tube in series may cause the set to be inoperative (See circuit below).



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment. The high voltage lead should be securely taped and kept away from chassis. Do not remove the horizontal oscillator tube (V11) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube V2 and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications. Connect a .001 MFD capacitor across the vertical input terminals of the oscilloscope. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 8 (grid) of 3rd Video IF Amp. Tube (V5A). Low side to chassis.	25MC (10MC Swp.)	23.9MC 26.3MC	Any	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A1, A2, A3	Connect a short jumper from pin 5 (plate) to pin 6 (screen) of 3rd Video IF Amp. Tube (V4). Adjust for response similar to Fig. 1 with markers at 90%. A3 is a coupling rod and affects band width. Remove short from pin 5 to pin 6 of V4.
2.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis	Not used	21.3MC (Unmod.)	"	Use VTVM DC probe to point (A). Common to chassis.	A4	Adjust for MINIMUM deflection.
3.	"	"	"	26.5MC	"	"	A5	Adjust for maximum deflection. Attenuate generator output to maintain not more than 2 volts at VTVM. Repeat step 2.
4.	"	"	"	24.0MC	"	"	A6	Adjust for maximum deflection. Attenuate generator output to maintain not more than 2 volts at VTVM.
5.	"	"	"	25.0MC	"	"	A7	"
6.	"	"	25MC (10MC Swp.)	21.3MC 23.8MC 26.25MC	"	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 2. Rock A7 for flat topped response. Increase sweep generator output and use high scope gain to view 22.25MC trap region. Adjust A4 so that 21.3MC occurs at peak of popup portion proceeding trap notch. 22.25MC should fall in trap notch. If response obtained is not similar to Fig. 2, repeat steps 1 thru 6.

SOUND IF ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. Tune in a TV signal and adjust the fine tuning control until sound bars just appear in the picture. Adjust A8 fully counterclockwise, then clockwise until the horizontal scanning lines are smooth and continuous. Readjust the fine tuning control for clearest picture and best sound. Insert an attenuator in series with the antenna and the receiver antenna terminals so that the signal strength may be varied from weak to strong. If a suitable attenuator is not available, stray feed the signal to the receiver by placing the antenna lead in near the antenna terminals. Reduce the signal input to the receiver so that the signal falls below the limiting level of the 6BN6 (audio detector) as evidenced by a "hiss" in the sound. Adjust the secondary of the sound take off transformer A9, the sound IF transformer (A10) the quadrature coil (A11) and the buzz control (R7) for maximum sound and minimum buzz. If hiss disappears while adjusting increase attenuation until hiss reappears.

OSCILLATOR ALIGNMENT

The channel oscillator adjustment screws are reached through a hole just above and slightly to the left of the fine tuning shaft. The correct oscillator adjustment screw is accessible thru this hole as the channel switch is turned to each channel. Connect the negative lead of a 1.5 volt bias battery to the tuner AGC. Connect the positive lead to chassis. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistor	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp.)	193.25MC 197.75MC	10	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A12	Adjust to place sound marker in trap notch as in Fig. 3. Use high scope gain and increase sweep generator to view trap region. Video marker should fall at 50% on response curve.
			213MC (10MC Swp.)	211.25MC 215.75MC	13		A13	
			207MC (10MC Swp.)	205.25MC 209.75MC	12		A14	
			201MC (10MC Swp.)	199.25MC 203.75MC	11		A15	
			189MC (10MC Swp.)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp.)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp.)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp.)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp.)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp.)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp.)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp.)	55.25MC 59.75MC	2		A23	

ALIGNMENT INSTRUCTIONS (cont)

RF AND MIXER ALIGNMENT

Leave the bias battery connected as under "Oscillator Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp.)	193. 25MC 197. 75MC	10	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A24,A25, A26	Adjust for response curve similar to Fig. 4. With markers above 90%.
9.	"	"	69MC (10MC Swp.)	67. 25MC 71. 75MC	4	"		Check for response curve similar to Fig. 4. If markers fall below 70% on any channel, make slight compromise adjustment of A24, A25, and A26 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			213MC (10MC Swp.)	211. 25MC 215. 75MC	13			
			207MC (10MC Swp.)	205. 25MC 209. 75MC	12			
			201MC (10MC Swp.)	199. 25MC 203. 75MC	11			
			189MC (10MC Swp.)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp.)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp.)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp.)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp.)	77. 25MC 81. 75MC	5			
			63MC (10MC Swp.)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp.)	55. 25MC 59. 75MC	2			

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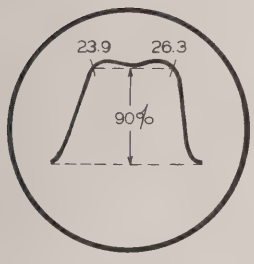


FIG.1

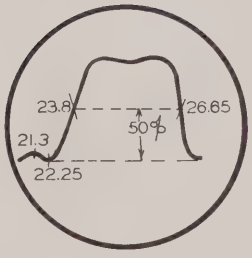


FIG.2

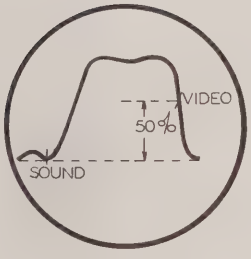


FIG.3

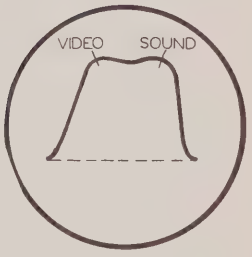
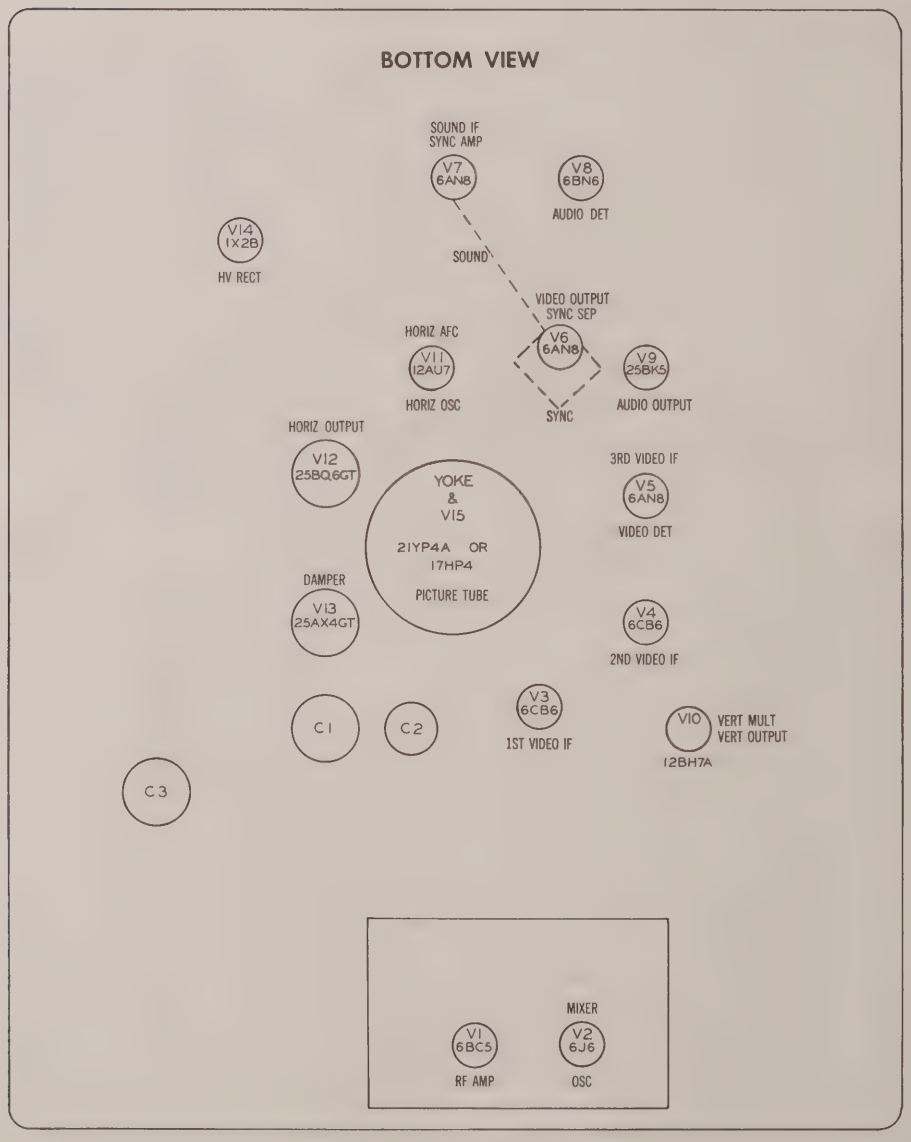


FIG.4

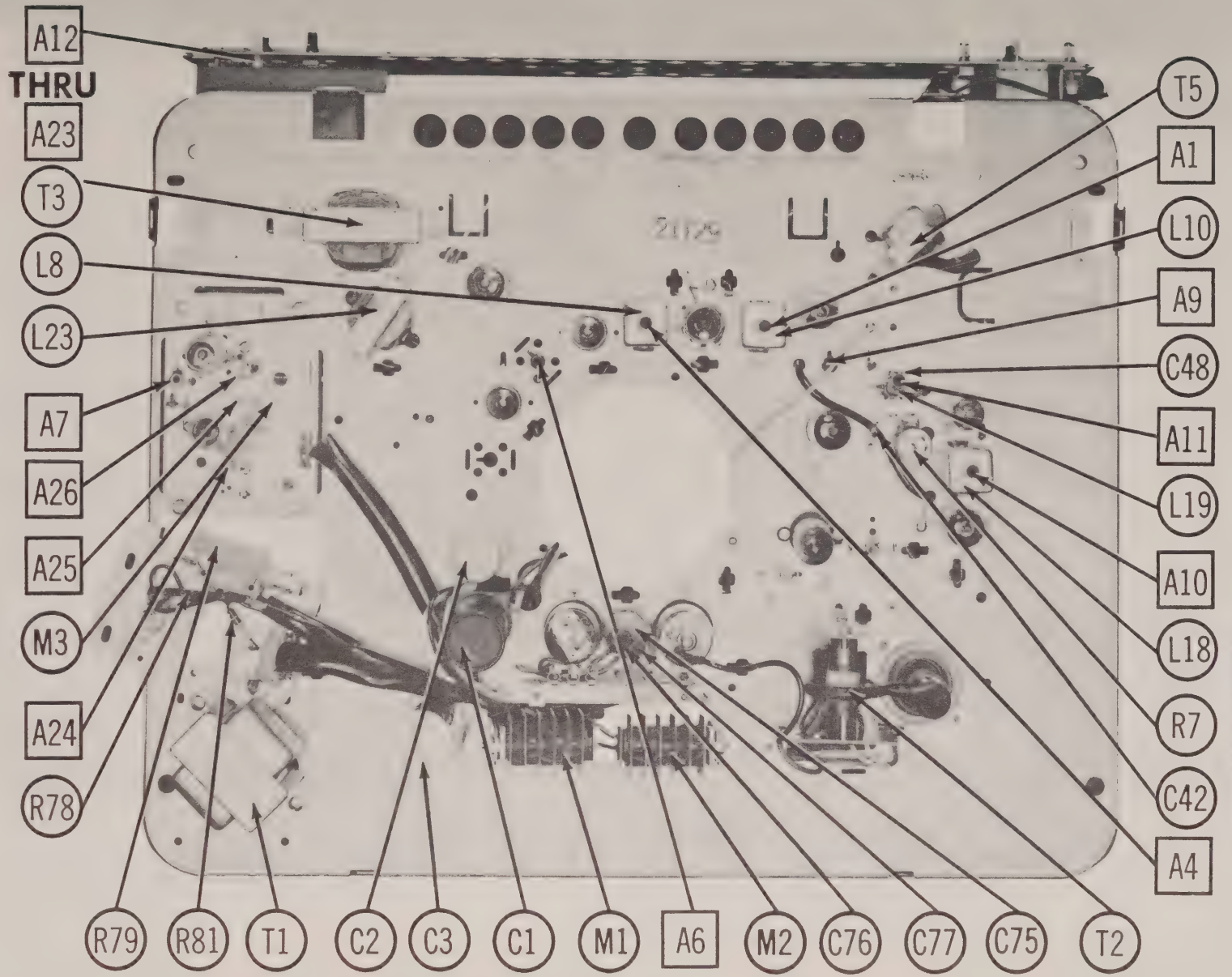
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1Meg	0Ω	0Ω	.1Ω	†2.5KΩ	†4.7KΩ	0Ω		
V 2	6J6	†18KΩ	†18KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	47Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 4	6CB6	1Meg	62Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 5	6AN8	4.7KΩ	4.7KΩ	.3Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	2.8Ω	82Ω
V 6	6AN8	†130KΩ	2.2Meg	0Ω	0Ω	.1Ω	†5.6KΩ	†2.5KΩ	1Meg	200Ω
V 7	6AN8	†8.2KΩ	22KΩ	0Ω	0Ω	.1Ω	†12KΩ	†12KΩ	1Meg	47Ω
V 8	6BN6	200Ω	.3Ω	0Ω	.1Ω	†18KΩ	5.3Ω	†220KΩ		
V 9	25BK5	†436Ω	NC	250KΩ	●11Ω	●0Ω	150Ω	250KΩ	40Ω	TP
V 10	12BH7A	▲4.2KΩ	2.2Meg	1.3KΩ	.1Ω	.1Ω	▲4.5Meg	47KΩ	130KΩ	1.8Ω
V 11	12AU7	†55KΩ	320KΩ	0Ω	0Ω	0Ω	†35KΩ	1.5Meg	300KΩ	.1Ω
V 12	25BQ6GT	NC	●20Ω	TP	†8.2KΩ	470KΩ	NC	●11Ω	0Ω	TOP CAP ▲12Ω
V 13	25AX4GT	TP	NC	380KΩ	NC	†40Ω	NC	●20Ω	●28Ω	
V 14	1X2B		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲267Ω
V 15	21YP4A	0Ω	22KΩ	PIN 6 †40Ω	PIN 10 †40Ω	PIN 11 †200KΩ	PIN 12 .1Ω			

●MEASURED FROM PIN 5 OF V9.
†MEASURED FROM OUTPUT OF M2.
▲MEASURED FROM PIN 3 OF V13.
NC-NO CONNECTION.
TP-TIE POINT.



TUBE PLACEMENT CHART



CHASSIS TOP VIEW
2D1511A (Ch. 2112-9)
TRUETONE MODEL

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: TRUETONE PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amp.	6BC3	6BC3	TBD	
V2	Mixer-Osc.	6J6	6J6	TBF	
V3	1st Video IF Amp.	6CB6	6CB6	TCM	
V4	2nd Video IF Amp.	6CB6	6CB6	TCM	
V5	3rd Video IF Amp. - Video Det.	6AN8	6AN8	9DA	
V6	Video Output-Sync Amp.	6AN8	6AN8	9DA	
V7	Sound IF Amp. - Sync Amp.	6AN8	6AN8	9DA	
V8	Audio Det.	6BN6	6BN6	7DF	
V9	Audio Output	3SBK5	2SBK5	9BQ	
V10	Vert. Mult. - Vert. Output	1S3BT4	1S3BT4	9A	1S3BT used as an alternate.
V11	Horiz. AFC - Horiz. Osc.	12AU7	12AU7	9A	
V12	Horiz. Output	25BQ6GT	25BQ6GT	8AM	
V13	Damper	25AX4GT	25AX4GT	4CG	
V14	HV Rect.	1X2B	1X2B	9Y	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V15	21YP4A ① 21YP4 17HP4	21YP4A ① 21YP4 17HP4,17RP4	21YP4A ① 21YP4 17HP4/17HP4 17HP4B	21YP4A ② ③ 21YP4 17HP4/ 17HP4 17HP4B	21YP4A ① 21YP4 17HP4/17RP4	12L 12L 12L 12L	① Aluminized ② Silver Screen

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	150	150	8C-22464	AF1SH-70	XA004	FP1J7	TM-150-150	T-050	TVL-1438
C2	150	150	8C-22463	AF1SH-70	XA004	FP1J7	TM-150-150	T-050	TVL-1429
C3A	●100	300	8C-33689		- C1G7 - FJS50.1	T4138		T-820 MT-0650	TVL-3174 TVA-1711
B	▲10	300			- TC39				
C	●25	450			- BR606				
D	50	50							
C4	5	300	8C-24174	PR8350V-4	BR435	TC60	TD-5-350	FM-3508	TVA-1601

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: TRUETONE PART No	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	1.5			NPO-S11.5	TCZ-1R5	Z30J	NPOA-1R2	Z7-5515	5TCCB-V15	
C6	9.3			NPO-D10.3	TCZ-9R3	Z05	NPOA-9R3		5TCCB-V92	
C7	.5-3				829-3		3115-01-GR5	CT565A		
C8	120			BPD-00012	DD-121	G044	811-121	UC-5312	5GA-712	
C9	800									
C10	.5-3				829-3		3115-01-GR5	CT565A		
C11	800									
C12	800									
C13	.5-3				829-3		3115-01-GR5	CT565A		
C14	8									
C15	10			NPO-D10	TCZ-10	Z01S	NPOA-100	Z7-541	5TCC-Q1	
C16	10			NPO-D10	TCZ-10	Z01S	NPOA-100	Z7-541	5TCC-Q1	
C17	120			BPD-00012	DD-121	G044	811-151	UC-5313	5GA-713	
C18	800									
C19	800									
C20	1000			8G-13201	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1
C21	1000			8G-13962	BPD-005	DD-503	K080	811-005	DC-535	5HK-D5
C22	2000			8G-13522	SI2000	D6-202	TP56	GP3-333-302	UC-523	5HK-D2
C23	1000			8G-13201	BPD-001	DD-103	K069	801-001	DC-531	5HK-D1
C24	5			8G-12166	NPO-S15	TCZ-5R	TZ07	NPOA-050	ST-555	5TCCB-V47
C25	47			8G-19731	BPD-000047	DD-471	G033	831-470	UC-5447	5GA-Q47
C26	1000			8G-13201	BPD001	DD-103	TP63	GP3L-102	UC-531	5HK-D1
C27	1.22	300		8C-33086	P268N-122		CUBSP22		PT4032	2TM-P122
C28	680			8G-31405	S1680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68
C29	5000			8G-13963	BPD-005	DD-502	K080	811-005	DC-535	5HK-D5
C30	5000			8G-13962	BPD-005	DD-502	K080	811-005	DC-535	5HK-D5
C31	5000			8G-13962	BPD-005	DD-503	K080	811-005	DC-535	5HK-D5
C32	5000			8G-13962	BPD-005	DD-503	K080	811-005	DC-535	5HK-D5
C33	1000			8G-13201	BPD-001	DD-103	K069	801-001	DC-531	5HK-D1
C34	5			8G-12166	NPO-S15	TCZ-5R	TZ07	NPOA-050	ST-555	5TCCB-V47
C35	6			8G-12165	NPO-S15	TCZ-6R	TZ07	NPOA-050	ST-555	5TCCB-V47
C36	.1	200		8C-23084	P268N-1	DF-104	CUB2P1		PT401	2TM-P1
C37	23	300		8C-31693	NPO-S232	TCZ-23	TZ14	NPOK-230	ST-5423	5TCC-Q22
C38	.1	400		8C-23095	P468N-1	DF-104	CUB4P1		PT401	4TM-P1
C39	.02	400		8C-23082	DF-203	DF-203	CUB4S1	817-02	PT413	4TM-S1
C40	.022	600		8C-23104	BPD-02	DF-203	CUB6S2	817-02	PT6153	6TM-S22
C41	100			8G-12759	S1100	D6-101	TP34	GP1K-101	UC-531	5GA-T1
C42	10			14B-23772						Note 1
C43	10000			8G-20269	BPD-01	DD-103	K069	811-01	DC-511	5HK-E1
C44	1000			8G-13201	BPD-001	DD-102	K069	801-005	DC-531	5HK-D1
C45	470	500		8P2-121	1469-00047	D6-471	SR5T47	811-471	MC5R45	M5-347
C46	10000			8G-20269	BPD-01	DD-103	K082	811-01	DC-511	5HK-E1
C47	10000			8G-20269	BPD-01	DD-103	K082	811-01	DC-511	5HK-E1
C48	18			8G-11769	NPO-S18	TCZ-18	TZ09	NPOA-100	ST-541	5TCC-Q1
C49	1000			8G-13201	BPD-001	DD-103	K069	801-001	DC-531	5HK-D1
C50	.01	400		8C-23091	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1
C51	.01	600		8C-23102	BPD-01	D6-103	CUB6S1	GP3-333-103	PT611	6TM-S1
C52A	270				BPD70		TP41	GP2K-271	UC-5327	5GA-T27
B	10000			‡17A-24212	BPD-01	†PC-365	K082	811-01	DC-511	5HK-E1
C	25				BZ15		TP25	GP1K-250	UC-5426	5GA-Q25
C53	.047	200		8C-23083	BPD-05	DF-503	CUB2S47		PT1347	2TM-S47
C54A	2000								DC-523	
B	8000			●17A-22376	●PA-110	●PC-100	●1157M1	●1405-01	DC-531	●V-1
C	5000								DC-535	
C55	2000			8G-18522	SI2000	D6-203	TP56	GP3-333-302	UC-523	5HK-D2
C56	.1	300		8C-23084	P268N-1	DF-104	CUB2P1		PT401	2TM-P1
C57	.033	400		8C-23816	P368N-033		CUB3S33		PT6133	6TM-S33
C58	.1	200		8C-23084	P268N-1	DF-104	CUB2P1		PT401	2TM-P1
C59	.1	400		8C-23095	P468N-1	DF-104	CUB4P1		PT401	4TM-P1
C60	1000	1500		8G-24991	HVD-15-1000	DD30-103	MCDM	IR5KV-102	DC3021	30GA-D1

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	82	500	8P3-L3	1469-000083	D6-830	SR5Q83	801-830		MS-483	
C62	82	500	8P3-L3	1469-000083	D6-830	SR5Q83	801-830		MS-483	
C63	.047	400	8E-23094	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C64	.047	200	8E-23083	BPD-05	DF-503	CUB2S47		PT2147	2TM-S47	
C65	.02	400	8E-23093	BPD-03	DF-303	CUB4S3	817-02	PT413	4TM-S3	
C66	.47	200	8E-23087	P2S8N-47		CUB2S47		PT2047	2TM-S47	
C67	270	500	8P2-285	1469-01270	TCZ-270	TC7S27	NPO-338-271	MCR24I	MS-527	
C68	.01	600	SM-24439							
C69	1000	500	8P7-125	1464-001		IR5D1	811-102	MCB255	MS-51	
C70	82	500	8P3-L3	1469-000083	D6-830	SR5Q83	801-830		MS-483	
C71	.001	600	8E-23089	SD000	D6-102	CUB6D1	GP3L-103	PT631	6TM-D1	
C72	.047	400	8E-23094	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C73	.1	600	8G-23106	P6S8N-1	DF-104	CUB6P1		PT601	6TM-P1	
C74	.15	200	8E-23085	P2S8N-15		CUB2P15		PT4015	2TM-P15	
C75	220	3000	8G-23953	HVD-30-220	DD30-221	V3T22	3KV-221	DC30322	30GA-T23	
C76	47	3000	8G-24036	HVD-30-47	DD30-470	V3Q47	3KV-470	DC30647	30GA-Q47	
C77	47	3000	8G-23949	HVD-30-47	DD30-470	V3Q47	3KV-470	DC30647	30GA-Q47	
C78	8000		8G-13963	BPD-005	DD-502	K080	811-005	DC-535	5HK-D5	
C78A	8000		8G-13963	BPD-ZK005	DD5-503	D6D80	811-005	DC-535	5HK-D5	
B	8000						811-005	DC-525		
C80	8000		8G-13963	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	

Note 1. C43 is a shielded sound IF lead having 30MMF capacity.
† Items C52A, C52B, C52C, R44A and R44B are combined in one unit.
● Items C54A, C54B, C54C, R51A, R51B and R51C are combined in one unit.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5MEG		10B-23694	AB-31	A47-50K-S	Q11-123	TA54L	Horizontal Hold
B	shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R1A.
R2A	100Ω		10A-23714	FP1-4	RTV-486	QJ-7344	LJ13L	Picture (Fasel)
B	1Meg			R2-52			UR16A	Volume (Rear)
C	Switch			KB-1			US-26	Attach to R2B.
R3A	500KΩ		10B-23695	AB-59	A47-500K-S	Q11-133	TA55L	Brightness
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R3A.
R4A	150KΩ		10B-23693-1	AB-43	A47-150K-S	Q11-253	TA184L	Vertical Hold
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R4A.
R5A	5000Ω		10B-23407	AB-10 *	A47-5000-S	Q11-114 *	TA53L *	Vertical Linearity-Stop at 5000Ω
B	Shaft		Not Req.	AK-1	KS8-3	Not Req.	Not Req.	Attach to R5A.
R6A	3Meg		10B-23696	AB-84	A47-3Meg-S	Q11-140	TA38L	Height
B	Shaft		Not Req.	AK-1	FKS-1/4	Not Req.	Not Req.	Attach to R6A.
R7	750Ω	2	20D-23857		2S-750			Buss (Wire Wound)

● Concentrikit Equivalent, K-8 Kit, Base Elements and Shafts, B17-J08, P17-J03 (Panel) B13-J37, K2-115 (Rear) 76-1 (Switch)

† Universal Replacement (Mallory Exact Duplicate Part No. UE65G)
‡ Connect a 100Ω½ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down).

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R5	680KΩ	½	9B1-95		
R9	10KΩ	½	9B1-74	BTS-10K	
R10	2200Ω	½	9B1-86	BTS-2200	
R11	10KΩ	½	9B1-74		
R12	15KΩ	½	9B1-76		
R13	10KΩ	½	9B1-74		
R14	220KΩ	½	9B1-27		
R15	15KΩ	½	9B1-76		
R16	1Meg	½	9B1-98	BTS-1Meg	
R17	5600Ω	½	9B1-71		
R18	1000Ω	½	9B1-83	BTS-1000	
R19	1000Ω	½	9B1-83	BTS-1000	
R20	47Ω	½	9B1-46	BTS-47	
R21	18KΩ	½	9B1-77		
R22	1000Ω	½	9B1-83	BTS-1000	
R23	1000Ω	½	9B1-83	BTS-1000	
R24	82Ω 5%	1	9B1-130	BTS-82 5%	
R25	27000Ω	½	9C11-104		
R26	33KΩ	½	9B1-80		
R27	1000Ω	½	9B1-83	BTS-1000	
R28	82Ω	½	9B1-49	BTS-82	
R29	4700Ω	½	9B1-70	BTS-4700	
R30	1Meg	½	9B1-98	BTS-1Meg	
R31	5600Ω	2	9B4-71	BTS-5600	
R32	47Ω	½	9B1-46	BTS-47	
R33	22KΩ	½	9B1-78	BTS-33K	
R34	4700Ω	½	9B1-17	BTS-4700	
R35	100KΩ	½	9B1-94	BTS-100K	
R36	1Meg	½	9B1-98	BTS-1Meg	
R37	12KΩ	½	9B2-75	BTA-12K	
R39	47Ω	½	9B1-46	BTS-47	
R39	560Ω	½	9B1-50	BTS-560	
R40	220KΩ	½	9B1-90	BTS-220K	
R41	3.3MEG	½	9B4-77	BTB-3M	
R42	150Ω	½	9B2-52	BTA-150	
R43	33KΩ	½	9B1-74	BTS-33K	
R44A	220KΩ	½	‡17A-24313	BTS-230K	
B	2.5MEG	½		BTS-2.5Meg	
R45	560KΩ	½	9B1-95	BTS-560K	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R46	100KΩ	½	9B1-86	BTS-100K	
R47	22KΩ	½	9B1-78	BTS-22K	
R48	1Meg	½	9B1-98	BTS-1Meg	
R49	1000Ω	½	9B1-82	BTS-1000	
R50	4700Ω	½	9B2-70	BTA-4700	
R51A	22KΩ	½		BTS-22K	
B	9300Ω	½	●17A-22376	BTS-8200	
C	8200Ω	½		BTS-8200	
R52	4700Ω	½	9B1-70	BTS-4700	
R53	82KΩ	½	9B1-85	BTS-82K	
R54	3.3Meg	½	9B1-102	BTS-3.3Meg	
R55	100KΩ	½	9B1-86	BTS-100K	
R56	47KΩ	½	9B1-82	BTS-47K	
R57	3.3Meg	½	9B1-104	BTS-3.3Meg	
R58	3300Ω	½	9C13-1105	PW7-3300	
R59	560Ω	½	9B1-50		
R60	560Ω	½	9B1-59		
R61	330KΩ	½	9B1-93	BTS-330K	
R62	820KΩ	½	9B1-97	BTS-820K	
R63	220KΩ	½	9B1-90		
R64	39KΩ	½	9B1-81		
R65	18KΩ	½	9B1-77		
R66	47KΩ	½	9B2-82	BTA-47K	
R67	68KΩ	½	9B1-84		
R68	3900Ω	½	9B1-89	BTS-3900	
R69	68KΩ	½	9B1-84		
R70	82KΩ	½	9B1-85		
R71	100KΩ	½	9B1-86	BTS-100K	
R72	68KΩ	½	9B1-84		
R73	100Ω	½	9B1-50	BTS-47K	
R74	47KΩ	½	9B1-82		
R75	8200Ω	2	9B4-73		
R76	1.5Ω	½	9C1-1065	PW½-1.5	
R77	2500Ω	5	9C-24033	PW7-2500	
R78	22Ω	15	9C-23572		
R79	5Ω	5	49M-23018		
R80	330KΩ	½	9B1-92	BTS-330K	
R81	470KΩ	½	9B1-94	BTS-470K	

† Items C52A, C52B, C52C, R44A, C44B are combined in one unit.
● Items C54A, C54B, C54C, R51A, R51B, R51C are combined in one unit.

TRANSFORMER (FILAMENT)

ITEM No	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No	Merit PART No.	Stancor PART No	Thordarson PART No.	Triad PART No
T1	115VAC @ .80A	12VCT @ 2.25A			12D23699-3	F5S36 ①	P-2959 ①	P-8130	21F67 ①	

① Drill new mounting holes.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: TRUETONE PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T2	Horiz. Output Trans	8HT-22722							FLY-80 *	
T3	Vert. Output Trans.	12E-23726-1	Z1804		122721	A-3037	A-8123	26S52	VJ-1	A-102X
T4A	Yoke Horiz (8.5MH)	20I-24749	DF601 ½	MDF-70 ½	206D1 ½	Y70908 ½	DY-8A ½	Y-5-1 ½	Y-12-1 ½	
B	Vert. (42MH)									

L Use original rear cover and centering device
2 Use original horizontal yoke damping network.
3 Use original yoke damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
8				8		8	
6			6				
3				3		3	
2			3				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	TRUETONE PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T5	6.3KΩ	3.6Ω	12C23704 12C23704-1 ↓	21000 ②	A-3931 ②	A-3856 ②	28S48 ②	S-7X ②	① Alternate audio output. Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No	QUAM PART No	NOTES
SP1	6"	PM	3.6Ω	18A2133	6A1	

COILS (RF-IF)

ITEM No	USE	DC RES.: PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No	Ram PART No	Thordarson PART No.	NOTES
L1	Ant. Matching Trans.	0Ω	0Ω	31T-426							
L2	Ant. Matching Trans.	0Ω	0Ω	31T-426							
L3	IF Trap	0Ω									
L4A	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-32A							Channel 2
B	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-33A							Channel 3
C	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-34A							Channel 4
D	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-35A							Channel 5
E	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-36A							Channel 6
F	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-37A							Channel 7
G	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-38A							Channel 8
H	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-39A							Channel 9
I	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-40A							Channel 10
J	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-41A							Channel 11
K	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-42A							Channel 12
L	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-43A							Channel 13
L5	RF Coil	0Ω		25A-127-01							
L6	1st Video IF	1Ω		21U-502							
L7	2nd Video IF	.3Ω		30123899		17-1004 *	TV-103 *	6189 ●			
L8	3rd Video IF	.3Ω		20126043							
L9	4th Choke	2.5Ω		13C-24965		19-3036	TV-180	6176			3S, 3 Microhenries
L10	4th Video IF	.3Ω	.3Ω	13B-23587							
L11	Series Peaking Coil	3.4Ω		16A-33233		19-8033		6153			33 Microhenries
L12	Series Peaking Coil	3.4Ω		16A-33233		19-8033		6153			33 Microhenries
L13	Shunt Peaking Coil	24Ω		16A-19265		19-6400	TV-190	4646			430 Microhenries
L14A	4.5MC Trap	2.5Ω		13C-24963							
B	1st Sound IF	2.5Ω									
L15	Series Peaking Coil	6.8Ω		16A-31391		19-3300		6155			305 Microhenries
L16	Shunt Peaking Coil	7.8Ω		16A-30970		19-3250	TV-185	6181			170 Microhenries
L17	Series Peaking Coil	2.8Ω		16A-34090		19-3005		4613			U Microhenries
L18	2nd Sound IF	.3Ω	.3Ω	20I-23873							
L19	Quadrature Coil	5.3Ω		20I-23727		20-1005	TV-151	1490			
L20	RF Choke	1.8Ω		16A-21701		19-1005		4613			6 Microhenries

* Parallel with 5MMF Cap. and enlarge mounting hole.
● Parallel with 5MMF Cap.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No	Ram PART No	Thordarson PART No.	NOTES
L21	24Ω	58Ω	13E-24440			6213				Horiz. Osc.
L22	38Ω		13M-24441 †			6314				Horiz. Phase

† Core Part No. 13M-24690.

TRUETONE MODEL 2D1311A (Ch. 21729)

PROPERTY OF
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DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	.260 ADC	39.5Ω	.64HY	16A-23889 16A-23889-1 ②	C5041 ①	C-2996 ①	C-2328 ①	26C44 ①	C-23X ①

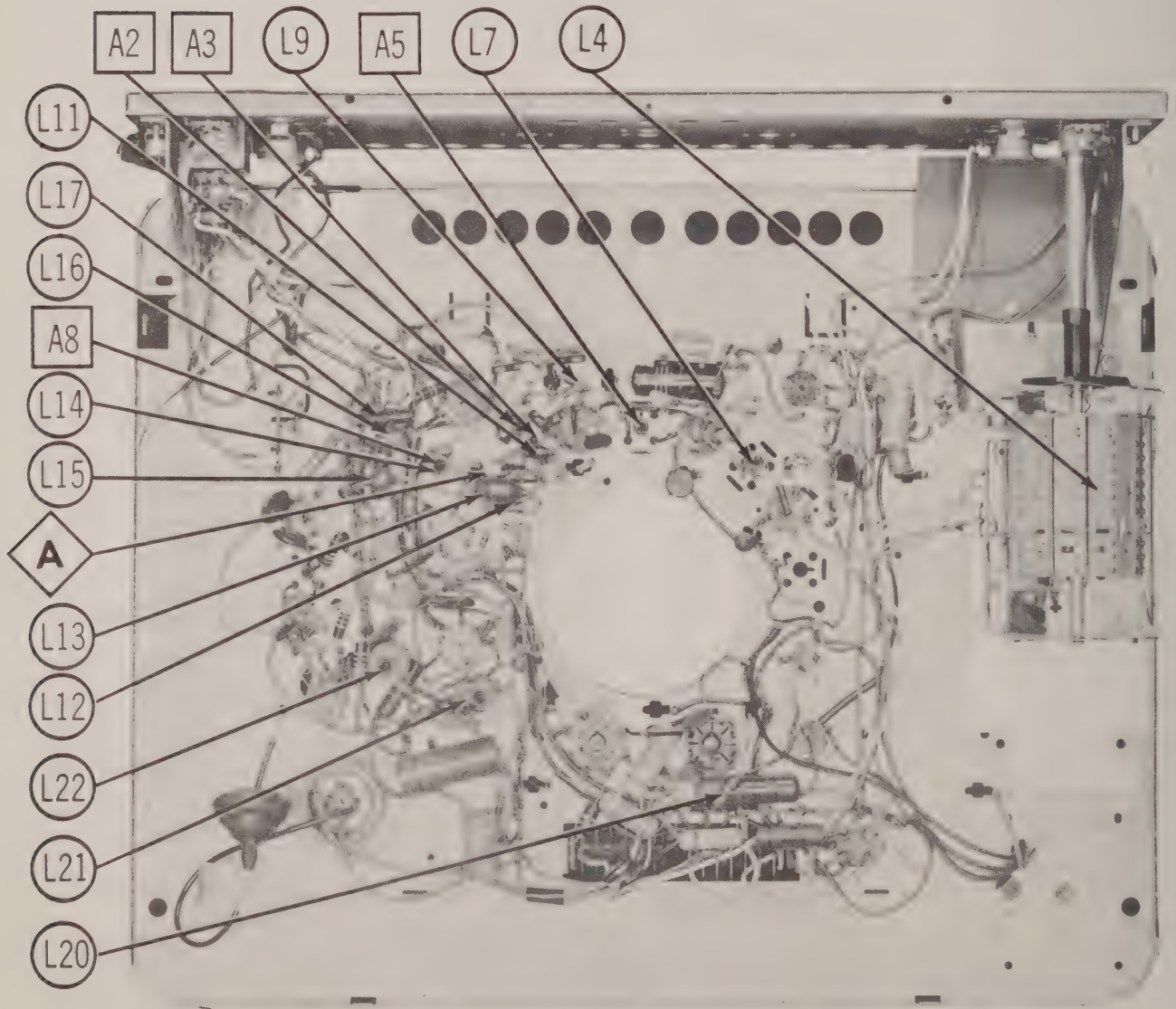
① Drill one new mounting hole.
② Alternate filter choke.

SELENIUM RECTIFIER

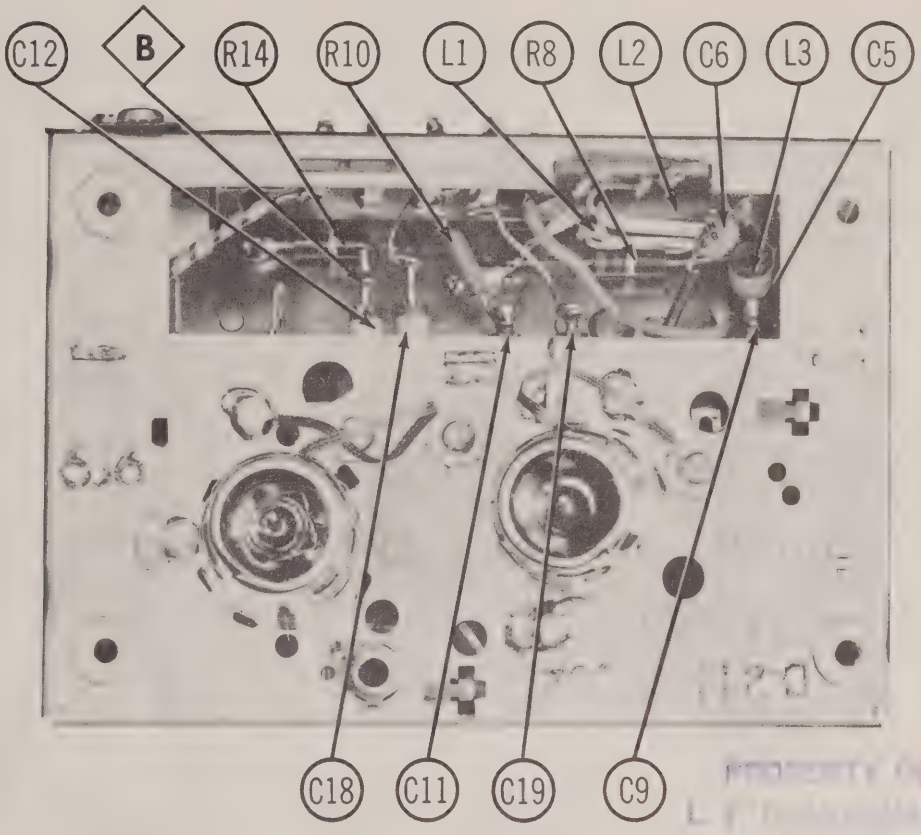
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.260ADC	21J23840	1236A	MR300	6S300	6Q4	300	
M2	.260ADC	21J23840	1236A	MR300	6S300	6Q4	300	

MISCELLANEOUS

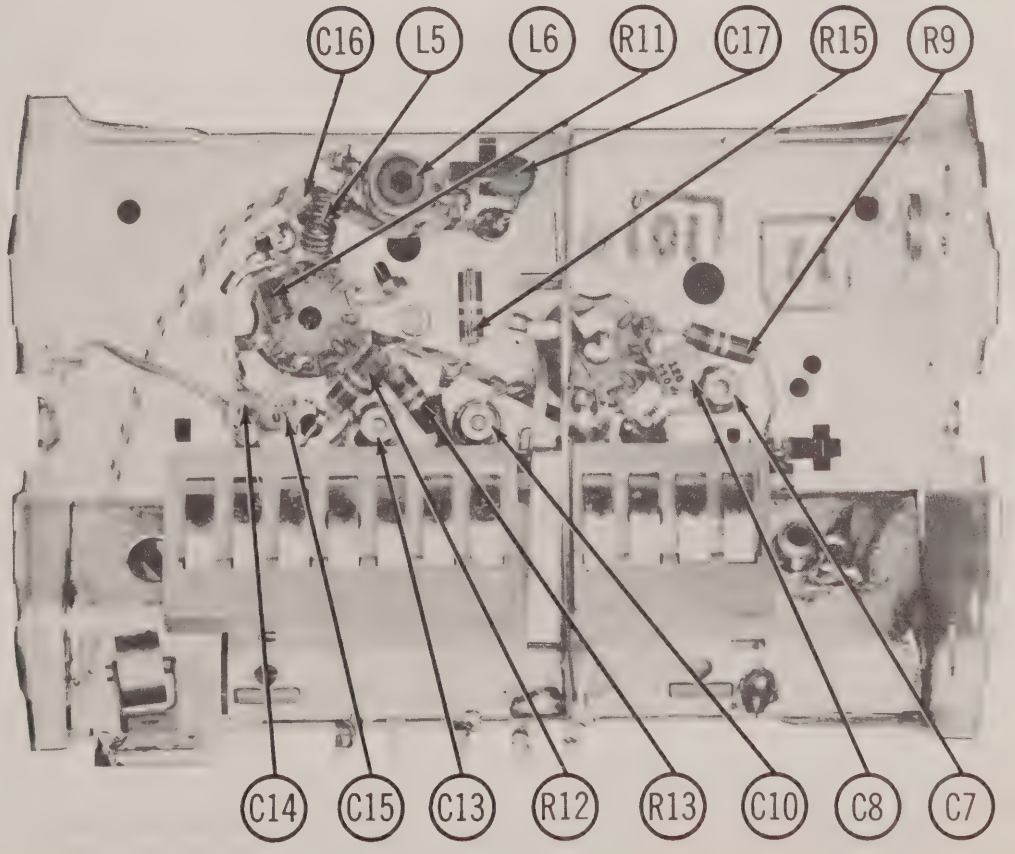
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Tuner	21J-25062	VHF
M4	Centering Device	16M-24493	Includes deflection yoke (T4) rear cover
M5	Ion Trap	16M-19706	
	Cabinet	2B-25049-A177	
	Knob	5B-23789-A29	Fine Tuning
	Knob	5B-23788-A29	Station Selector
	Knob	5B-23787-A29	Picture
	Knob	5B-23786-A29	On-off-volume
	Knob	5B23805-A29	Horiz. hold, vertical hold, & brightness



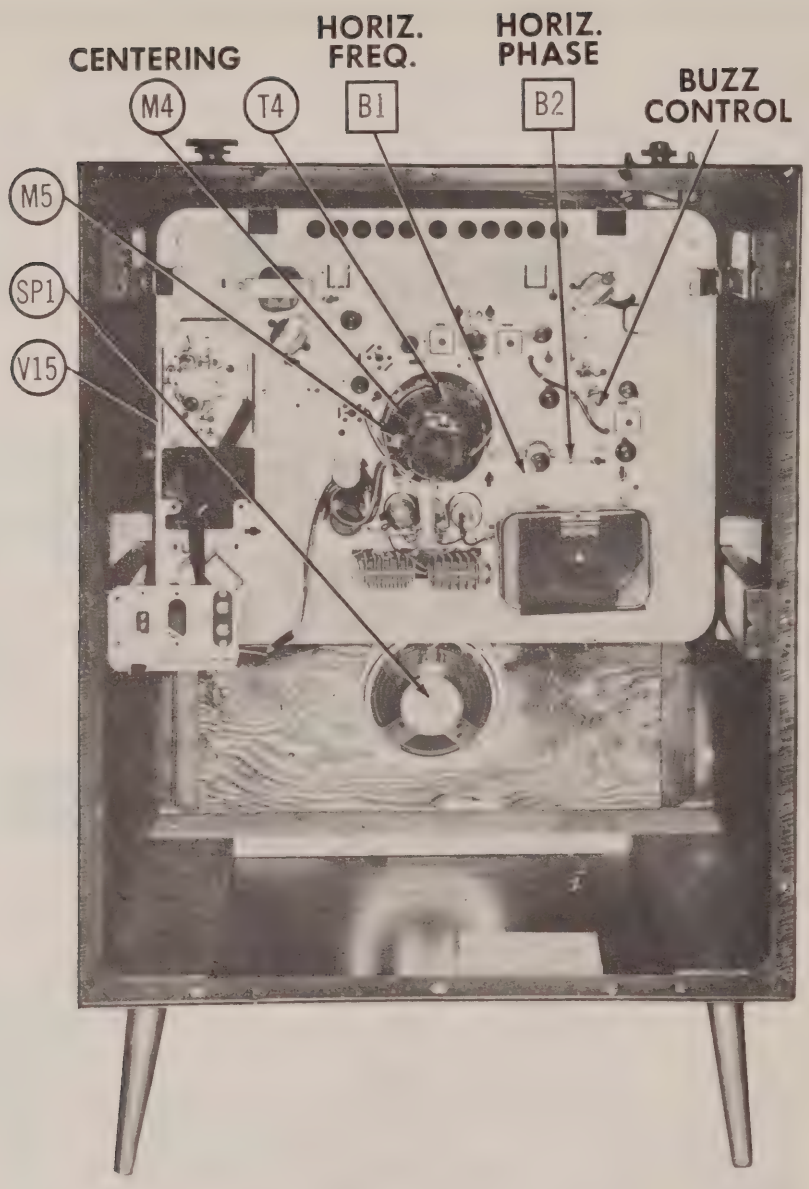
CHASSIS BOTTOM VIEW INDUCTOR & ALIGN. IDENTIFICATION



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

1. Set the horizontal hold control tò its mid-range position.

2. Connect a short clip lead across the horizontal phase coil (L22).

3. Adjust the horizontal frequency slug (Bl) until the picture synchronizes horizontally.

4. Remove short from L22.

5. Connect the vertical amplifier of an oscilloscope thru a low capacitor probe to junction of L21, L22, C71 and R72. Low side to chassis. Adjust the horizontal phase slug (B2) until waveform similar to Fig. 5 is obtained. While making this adjustment keep the picture in sync with the horizontal hold control and if necessary Bl.

6. Remove scope from junction of L21, L22, C71 and R721

7. Turn the horizontal hold control fully clockwise, then fully counter clockwise. The picture should fall out of sync at both extreme ends of the horizontal hold control with equal number of sloping diagonal bars at both ends. If necessary repeat steps 1 thru 6.

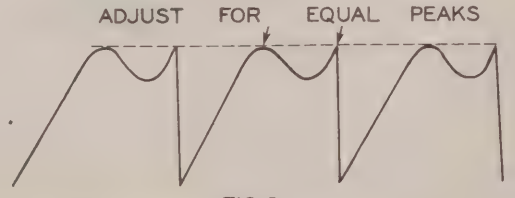


FIG. 5

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH MODEL T2367E

TRADE NAME	Zenith	MODELS	CHASSIS
		T2359E, EU, R, RU, T2360R, RU	
		T2367E, EU, Y, YU	22T20
		T2383R, RU	22T20/1T01
		T2387R, RU, T2391E, EU, R, RU	22T20/10L20
		T2671E, EU, R, RU	22T21
		T2694EU, HU	22T21/12R21

MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Television Receiver
TUBES	Twenty-two
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.25 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier).

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Tube Placement Chart (Top View) 5

FOR SERVICE INFORMATION ON RADIO CHASSIS 10L20, SEE PHOTOFACT SET 233- FOLDER 13, AND RADIO CHASSIS 12R21 SEE PHOTOFACT SET 281 - FOLDER 11.

ZENITH MODELS T2359E, EU, R, RU, T2360R, RU, T2367E, EU, Y, YU, T2383R, RU, T2387R, RU, T2391E, EU, R, RU, T2671E, EU, R, RU, T2994EU, HU (Ch. 22T20, 22T21 & Preamp. Ch. 1T01)

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DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove channel selector knob.
2. Remove 6 push-on type control knobs from under front control door.
3. Remove 9 wood screws and 1 metal screw. Remove fine tuning knob. Remove rear cover.
4. Disconnect 3 tuner cables.
5. Remove volume control plug from chassis.
6. Remove 2 metal screws from rear of cabinet (holding tuner cabinet) lower rear of tuner and pull out.
7. Disconnect 2 speaker leads.
8. Remove 4 chassis bolts. Remove chassis.

VOLUME CONTROL ASSEMBLY REMOVAL

1. Remove push-on type control knob.
2. Remove 1 metal screw from escutcheon panel. Remove panel.
3. Remove 1 control nut (outside cabinet).
4. Remove 1 metal screw from lead clamp (inside cabinet).
5. Remove lead clamp and control.

SPEAKER REMOVAL

1. Remove 6 speaker nuts from 2 speakers. Remove 2 speakers.

MODELS	CHASSIS
T2359E, EU, R, RU, T2360R, RU	
T2367E, EU, Y, YU	22T20
T2383R, RU	22T20/1T01
T2387R, RU, T2391E, EU, R, RU	22T20/10L20
T2671E, EU, R, RU	22T21
T2694EU, HU	22T21/12R21

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF tuner oscillator circuit, it is necessary to remove rear cover and supply power to set. Adjustments are made thru the hole marked "Bull's Eye Adjustment" and are accessible one at a time as the selector switch is turned to each channel. (Fine tuning control must be set to the center of its range before making adjustments). Use Zenith alignment wrench part #68-21 for adjustment.

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 2 push-on type control knobs (channel selector and on-off-volume). Remove 2 metal screws from each knob excutcheon panels. Remove escutcheons. Let safety glass fall forward and lift out of slot at the bottom. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

SPECIAL ADJUSTMENTS

A. AGC Control Adjustment

Turn the set on and tune in a TV signal and observe the picture. Starting from the full clockwise position, turn the AGC control (R4) counter clockwise slowly until picture distorts and buzz is heard in the sound. Then turn R4 clockwise for clearest picture and best sound.

B. Fringe Lock Adjustment

Turn the fringe lock control (R10) to 1/4 turn from full clockwise position. Adjust the vertical and horizontal hold for picture synchronization and check stability by switching off channel and back again. Slightly retouch R10 if necessary for maximum stability while testing as above.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the front panel service control. Adjust the horizontal hold (L24) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

Adjust the buzz control (R9) located on the rear apron of chassis for maximum volume and minimum buzz.

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the reaster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.

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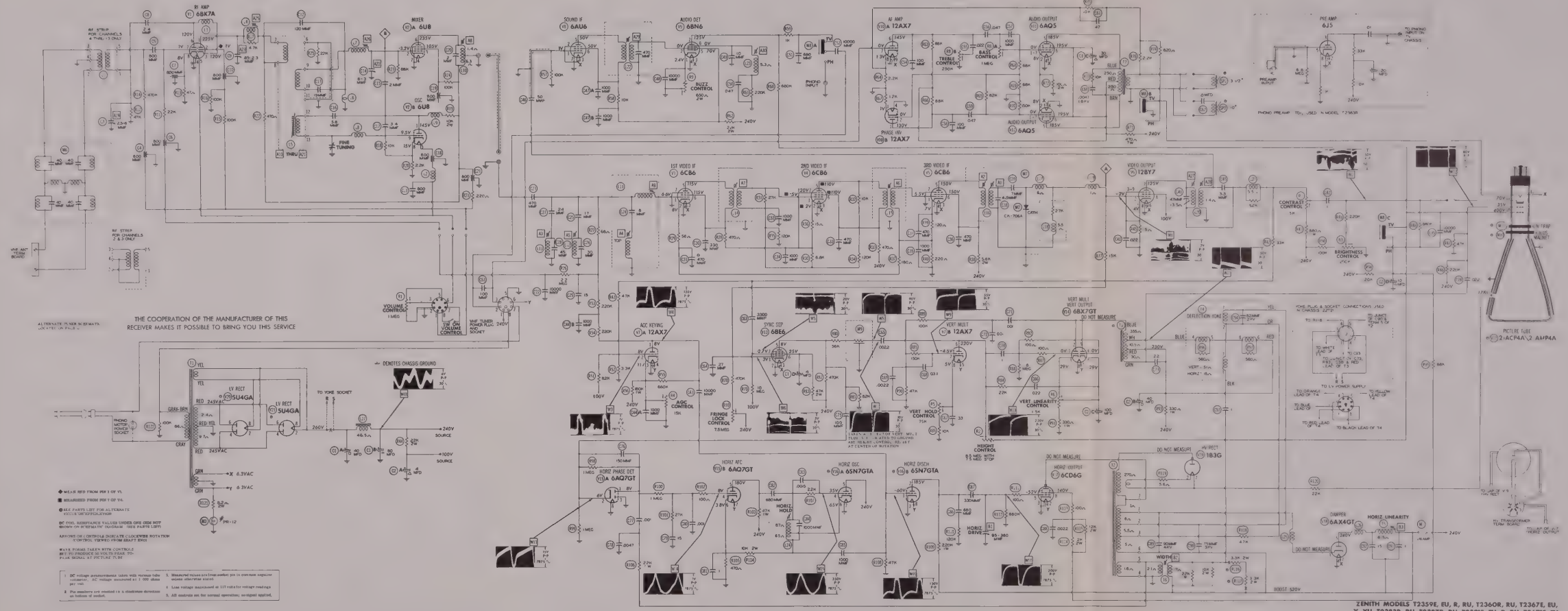
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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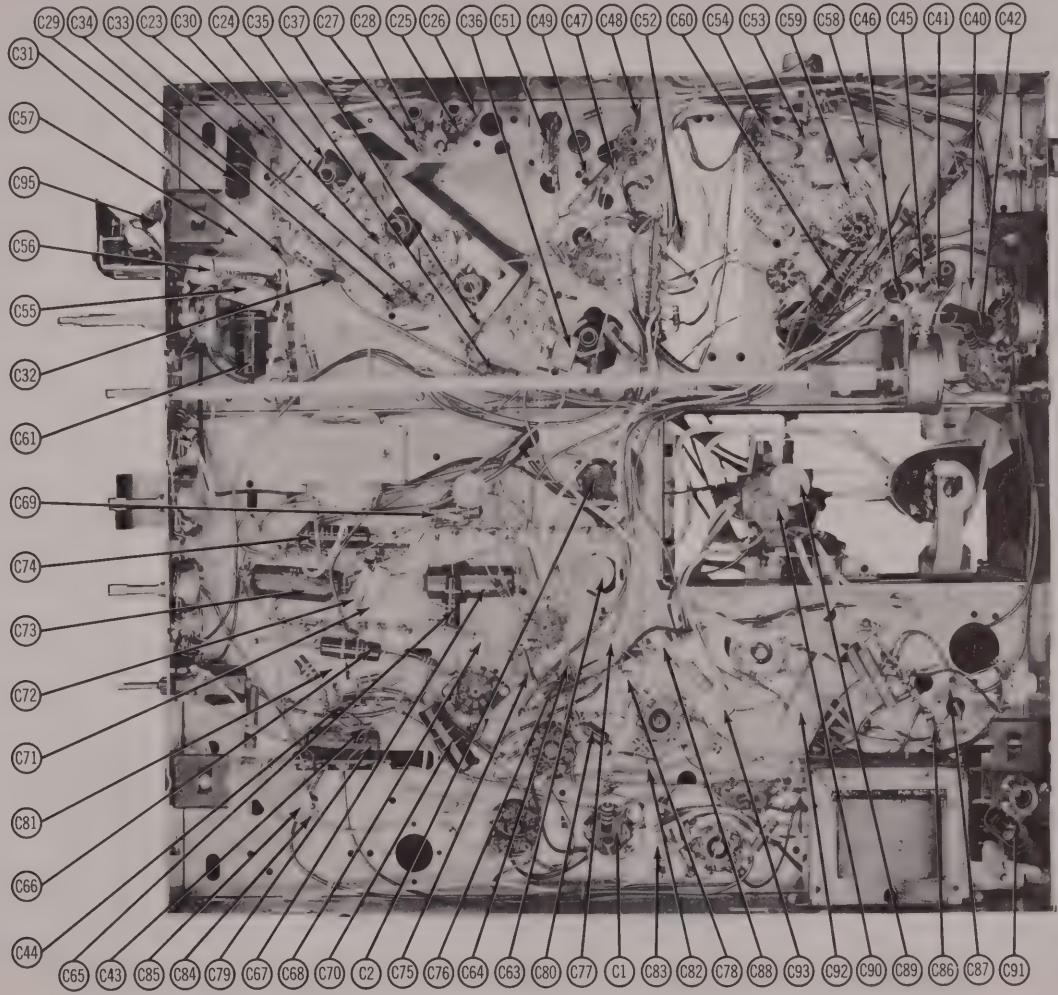
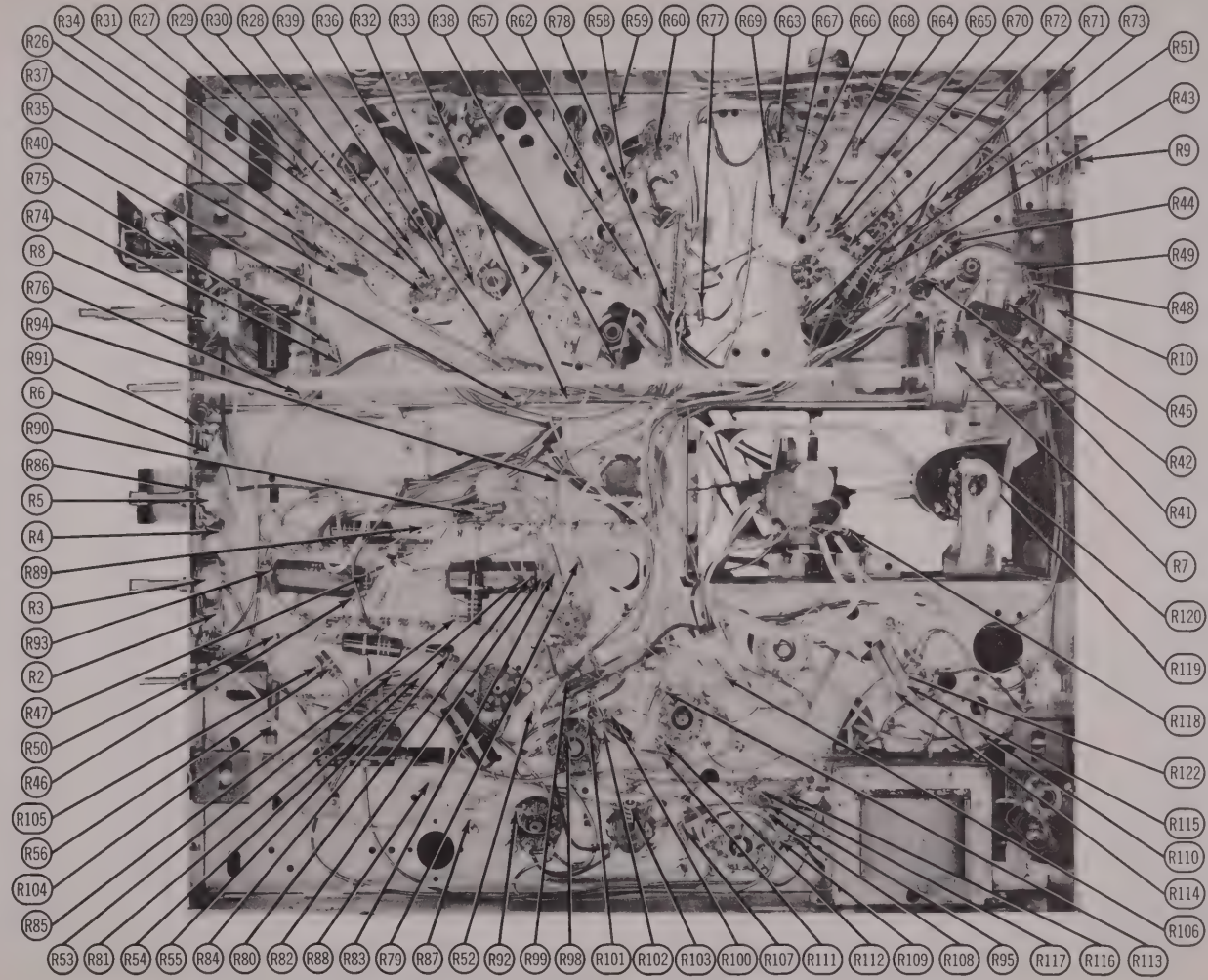


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

ZENITH MODELS T23506, RU, R, RU, T23608, RU, T23675, RU, Y, TU, T23830, RU, T23975, RU, T24115, RU, R, RU, T24715, RU, R, RU, T29944U, HU (Ch. 23120, 23121 & Pre-amp. Ch. 1101)



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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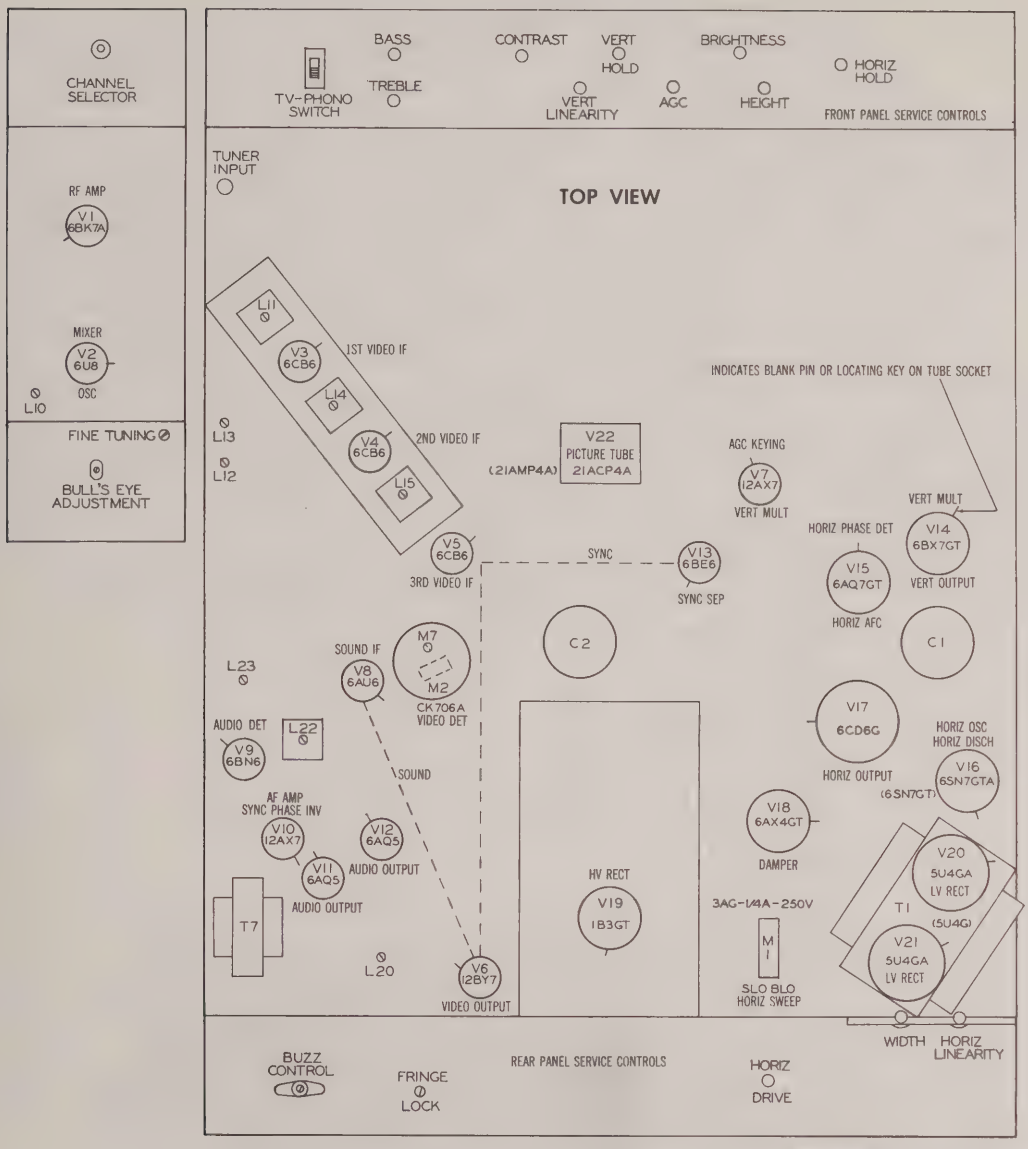
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V20, V21**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V7, V22**
Has pic, no sound - **V8, V9, V10, V11, V12**
Overloaded picture - **V7**

SYNC FAILURE
No vert. sync - **V7, V13, V14**
No horiz. sync -**V13, V15, V16**
No vert. or horiz. sync - **V13**

SWEEP FAILURE
No raster, has sound - **V16, V17, V18, V19, V22, Fuse (M1)**
No vertical deflection - **V7, V14**
Poor vert. linearity or foldover - **V7, V14**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V19, V20, V21**
Vert. off freq. - **V7, V13, V14**
Horiz. off freq. - **V13, V15, V16**

PROPERTY OF
3924
DENVER,

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the set is aligned with the picture tube removed, the end of the high voltage lead should be securely taped and kept away from chassis.

VIDEO IF ALIGNMENT

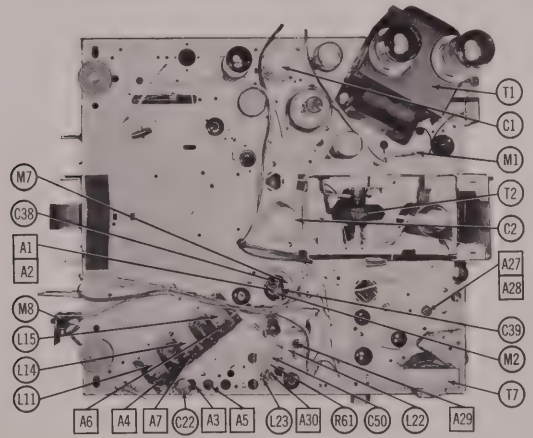
Turn the turret tuner to a position mid-way between two channels. Connect the negative lead of a 2 volt bias supply to the junction of R54 and R55. Connect the positive lead to chassis. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470MMF	High side to pin 1 (grid) of 3rd. Video IF amp. tube (V5). Low side to chassis.	44MC (30MC Swp)	39.75MC 45.75MC	See note above	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A1, A2	Adjust for response curve similar to Fig. 1. If correct response cannot be obtained check to see that the slugs are entering the coils from the outside end of coils.
2.	"	High side to point Ⓐ. Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5	Reduce bias to zero. Turn sweep generator output to maximum. Increase gain on scope to magnify trap portions of response curve. Adjust traps for response similar to Fig. 2. A3 adjusts 39.75MC trap, A4 adjust 41.25 MC trap and A5 adjust 47.25MC Trap.
3.	"	"	"	42.75MC 45.0MC 45.75MC	"	"	A6, A7, A8, A9	Replace 2 volt bias. Adjust for response curve similar to Fig. 3. Readjustment of A1 and A2 should not be required to obtain proper response.

OSCILLATOR ALIGNMENT

The master oscillator adjustment of (L8) is to be made only if the adjustment of the individual oscillator adjustments fail to bring the channels within the range of the fine tuning control. L8 is adjusted by expanding or compressing coil turns. If channels 2 thru 6 fall within the range of the fine tuning control but the higher ones do not, slightly readjust L8 to bring in the higher channels. If channels 2 thru 6 do not fall within tuning range, readjust the bull's-eye adjustment on rear of tuner. Connect the negative lead of a 1 volt bias supply as under "Video IF Alignment". Turn the oscilloscope gain up so that the sound trap notch in the response curve becomes visible. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	57MC (30MC Swp)	59.75MC	2	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A10	Adjust to place sound marker in trap notch as shown in Fig. 4.
			63MC (30MC Swp)	65.75MC	3		A11	
			69MC (30MC Swp)	71.75MC	4		A12	
			75MC (30MC Swp)	81.75MC	5		A13	
			85MC (30MC Swp)	87.75MC	6		A14	
			177MC (30MC Swp)	179.75MC	7		A15	
			183MC (30MC Swp)	185.75MC	8		A16	
			189MC (30MC Swp)	191.75MC	9		A17	
			195MC (30MC Swp)	197.75MC	10		A18	
			201MC (30MC Swp)	203.75MC	11		A19	
			207MC (30MC Swp)	209.75MC	12		A20	
			213MC (30MC Swp)	215.75MC	13		A21	



CHASSIS TOP VIEW

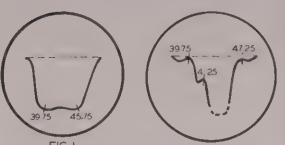


FIG. 1

FIG. 2

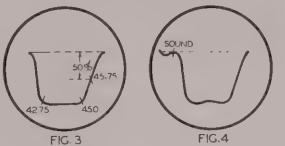


FIG. 3

FIG. 4

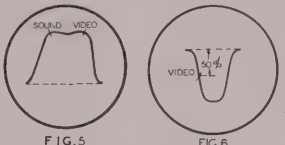


FIG. 5

FIG. 6

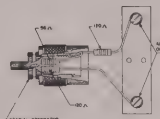


FIG. 7

RF AND MIXER ALIGNMENT

Leave bias connected as under "Oscillator Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	69MC (30MC Swp)	67.25MC 71.75MC	4	Vert. Amp. to point Ⓐ. Low side to chassis.	A22, A23, A24	Adjust for response curve similar to Fig.5.
6.	"	"	201MC (30MC Swp)	199.25MC 203.75MC	11	"	A25, A26	Adjust for response curve similar to Fig.5. If bandpass is not correct SLIGHTLY bend L6 (slotted tab in shield plate). Repeat steps 5 and 6 for optimum results on all channels.

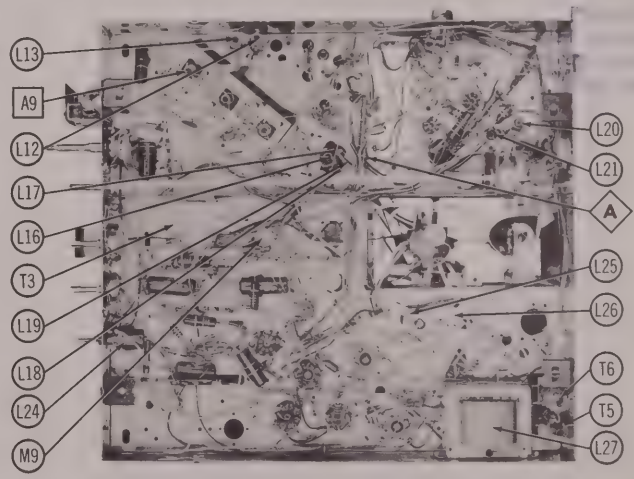
SOUND IF ALIGNMENT

Connect an attenuator (Zenith part no. S-17203 or equivalent) in series with the receiver antenna. Tune in a TV signal and adjust the attenuator until the signal fells below the limiting level of the 6BN6 audio detector as evidenced by a bias similar to super-regeneration. Adjust the sound take-off transformer (A27 and A28), the sound IF coil (A29) and the quadrature coil (A30) for maximum sound of best quality. Adjust the buzz control (R9) for minimum intercarrier buzz. If the buzz cannot be eliminated with the buzz control, check the setting of the AGC control. If during any of the sound IF adjustments the signal rises above the limiting level, (hiss disappears), increase the attenuation until the hiss returns.

UHF TUNER ALIGNMENT FOR VHF-UHF TUNER #021845

Alignment of the UHF tuner should not be attempted unless proper test equipment is available. Switch receiver to UHF position. Connect bias as under "Video IF Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Fig. 7	Across UHF antenna terminals thru matching network (Fig.7)	713MC (30MC Swp)	711.25MC	54	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A31	Tuner rocker arm should be in a horizontal position. If necessary, loosen the set screw and adjust tuner shaft so that rocker arm is horizontal with indicator set to channel 54. Do not adjust A31 unless oscillator calibration is off more than 3 channels. If necessary, adjust A31 for response similar to Fig. 6 with video marker at 50%. The image (weaker response) will appear also. The response toward the counter clockwise position of A31 is the correct response.
8.	"	"	"	"	"	"	A32, A33	Adjust for maximum amplitude and symmetry response similar to Fig. 6.
9.	"	"	473MC (30MC Swp)	471.25MC	14	"		Check for response similar to Fig. 6. If oscillator is off more than 3 channels, adjust the oscillator travel adjustment (osc. mixer and ant. travel adjustments are the 3 round thrum screws on top of the tuner) to scale. Care must be used in making these adjustments so as not move the rocker arm out of its bearing. Set the mixer and antenna travel adjustments for maximum response on scope.
10.	"	"	887MC (30MC Swp)	885.25MC	83	"	A34, A35, A36	Adjust A34 to place video marker at 50% on response curve as in Fig. 6. Adjust A35 and A36 for maximum amplitude and symmetry.



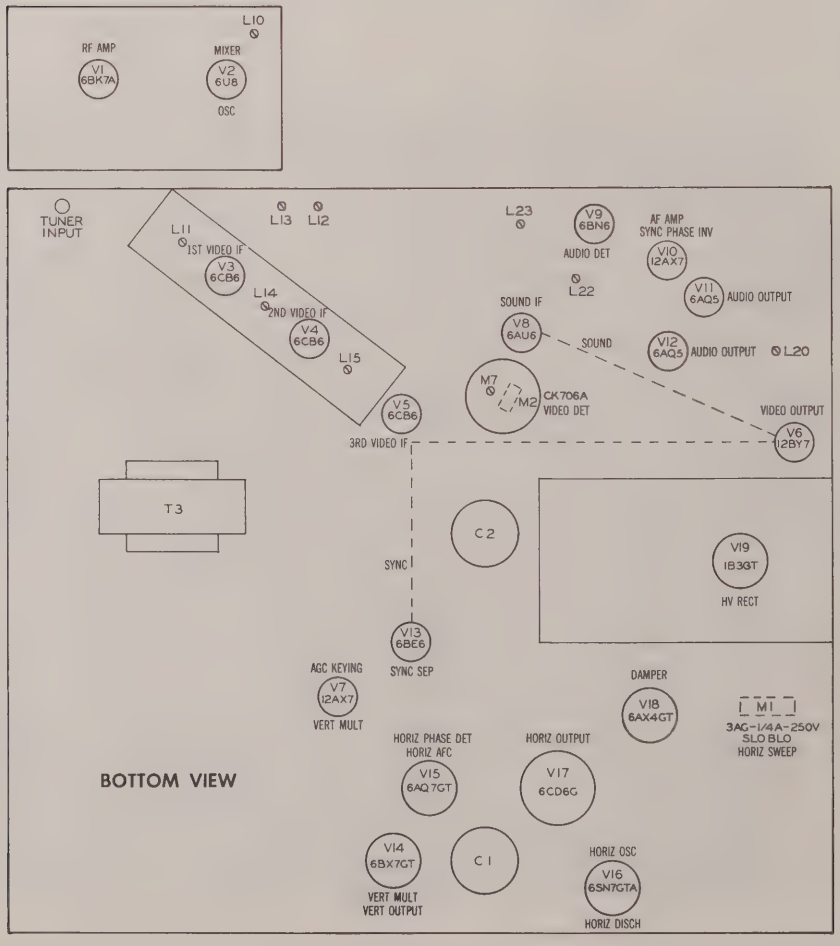
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

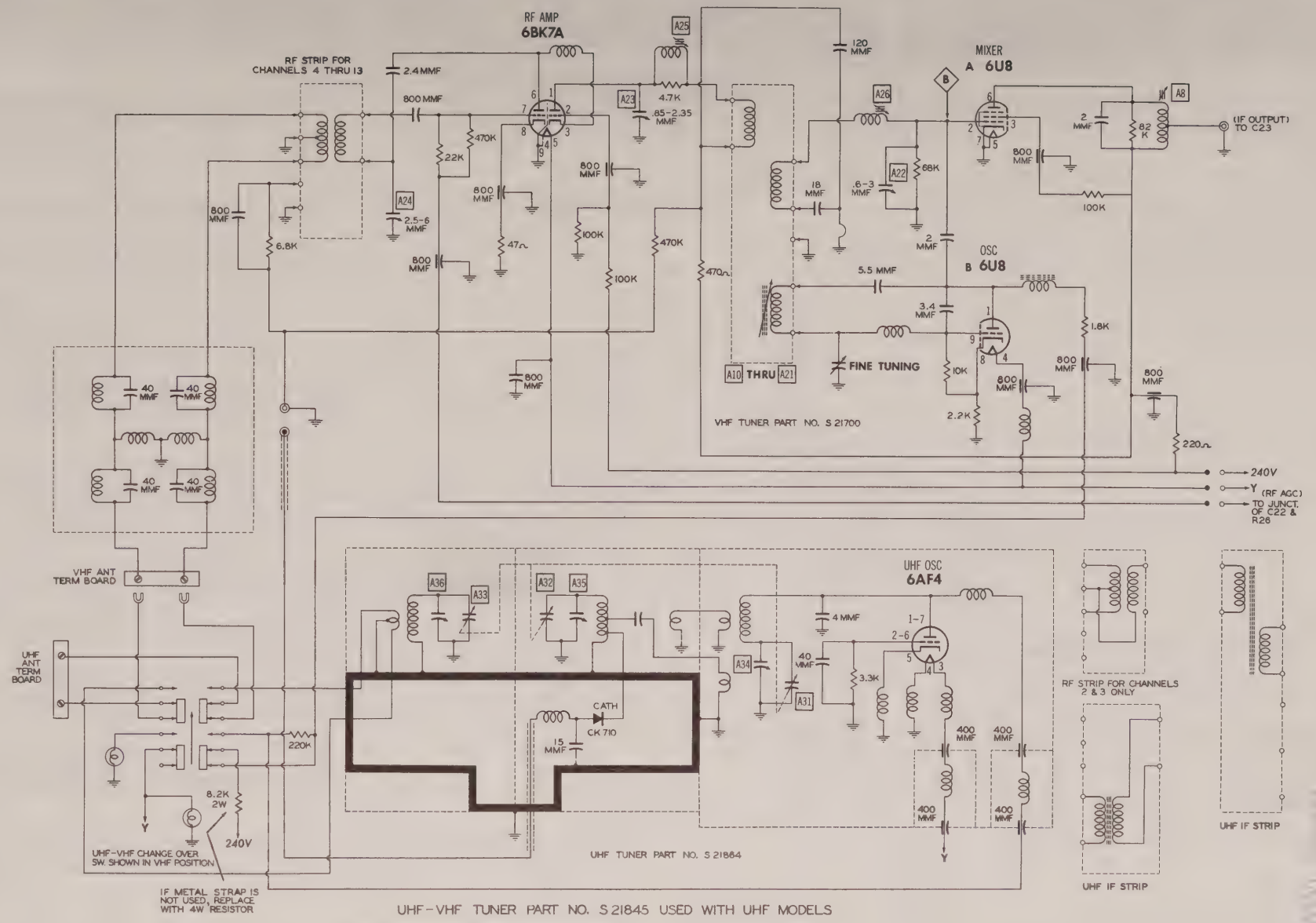
ZENITH MODELS T2350E, EU, R, RU, T2360R, RU, T2397E, EU, Y, YU, T2383R, RU, T2397R, RU, T2391E, EU, R, RU, T2071E, EU, R, RU, T2996EU, HU (Ch. 22T2O, 22T2t & Preamp. Ch. 17D1)

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7A	†750Ω	55KΩ	INF	0Ω	. 1Ω	INF	3. 5Meg	47Ω	0Ω
V 2	6U8	†10KΩ	68KΩ	†100KΩ	. 1Ω	0Ω	†300Ω	0Ω	2. 2KΩ	12KΩ
V 3	6CB6	1. 2Meg	450Ω	. 1Ω	0Ω	▲ 470Ω	▲ 470Ω	0Ω		
V 4	6CB6	60KΩ	60KΩ	. 1Ω	0Ω	† 550Ω	† 550Ω	60KΩ		
V 5	6CB6	220Ω	340Ω	. 1Ω	0Ω	† 5. 6KΩ	† 5. 6KΩ	0Ω		
V 6	12BY7	15Ω	2. 7KΩ	15Ω	0Ω	0Ω	. 1Ω	† 5. 5KΩ	† 22KΩ	15Ω
V 7	12AX7	700KΩ	3. 3KΩ	10KΩ	. 1Ω	. 1Ω	◓1. 5Meg	200KΩ	50KΩ	0Ω
V 8	6AU6	100KΩ	0Ω	. 1Ω	0Ω	† 32KΩ	† 32KΩ	0Ω		
V 9	6BN6	350Ω	. 4Ω	. 1Ω	0Ω	† 22KΩ	220KΩ	◓750KΩ		
V 10	12AX7	† 68KΩ	50KΩ	1. 2KΩ	0Ω	0Ω	† 68KΩ	250KΩ	2. 2KΩ	. 1Ω
V 11	6AQ5	130KΩ	100Ω	. 1Ω	0Ω	†800Ω	† 520Ω	130KΩ		
V 12	6AQ5	75KΩ	100Ω	. 1Ω	0Ω	† 800Ω	† 520Ω	75KΩ		
V 13	6BE6	18KΩ	0Ω	. 1Ω	0Ω	† 100KΩ	† 47KΩ	10Meg		
V 14	6BX7GT	1. 8Meg	† 800Ω	1KΩ	1. 8Meg	† 800Ω	1KΩ	. 1Ω	0Ω	
V 15	6AQ7GT	2Meg	1Meg	0Ω	3Meg	† 47KΩ	470Ω	. 1Ω	0Ω	
V 16	6SN7GTA	47KΩ	◓ 220KΩ	0Ω	32KΩ	† 47Ω	10KΩ	0Ω	. 1Ω	
V 17	6CD6G	TP	. 1Ω	0Ω	TP	680KΩ	NC	0Ω	† 6KΩ	TOP CAP ◓ 7Ω
V 18	6AX4GT	TP	NC	220KΩ	NC	† 55Ω	TP	. 1Ω	0Ω	
V 19	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ◓ 280Ω
V 20	5U4GA	INF	20KΩ	INF	10Ω	INF	12Ω	INF	20KΩ	
V 21	5U4GA	INF	20KΩ	INF	10Ω	INF	12Ω	INF	20KΩ	
V 22	21ACP4A/ 21AMP4A	0Ω	† 60KΩ	PIN 10 ◓ 68KΩ	PIN 11 † 300KΩ	PIN 12 . 1Ω				

† MEASURED FROM PIN 2 OF V20.
▲ MEASURED FROM PIN 7 OF V4.
◓ MEASURED FROM PIN 3 OF V18.
TP-TIE POINT.
NC-NO CONNECTION.





UHF-VHF TUNER PART NO. S 21845 USED WITH UHF MODELS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTERNATE TUNER SCHEMATIC

ZENITH MODELS T2359E, EU, R, RU, T2360R, RU, T2367E, EU, Y, YU, T2383R, RU, T2387R, RU, T2391E, EU, R, RU, T2671E, EU, R, RU, T2994EU, HU (Ch. 2212O, 2212I & Preamp. Ch. 1101)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amp.	6BK7A	5BK7A	9AJ	
V2	Mixer-Osc.	6U8	6U8	9AE	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	AGC Keying - Vert. Mult.	12AX7	12AX7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Audio Det.	6BN6	6BN6	7DF	
V10	AF Amp. - Phase Inv.	12AX7	12AX7	9A	
V11	Audio Output	6AQ5	6AQ5	7BZ	
V12	Audio Output	6AQ5	6AQ5	7BZ	
V13	Sync Sep.	6BE6	6BE6	7CH	
V14	Vert. Mult. - Horiz. Output	6BX7GT	6BX7GT	8BD	
V15	Horiz. Phase Det. - Horiz. AFC	6AQ7GT	6AQ7GT	8CK	
V16	Horiz. Osc. - Horiz. Discharge	6BN7GTA	6BN7GTA	8BD	6SN7GT used as an alternate.
V17	Horiz. Output	6CD6G	6CD6G	9BT	
V18	Damper	6AX4GT	6AX4GT	4CG	
V19	HV Rect.	1B3G	1B3G	3C	
V30	LV Rec.	5U4GA	5U4GA	5T	5U4G used as an alternate.
V31	LV Rect.	5U4GA	5U4GA	5T	5U4G used as an alternate.

CATHODE-RAY TUBE

ITEM No.	ZENITH PART No.	CBS	GENERAL ELECTRIC	SYLVANIA	WESTINGHOUSE	RETMA BASE TYPE	NOTES
V23	21ACP4A/ 21AMP4A	21AMP4A ①	21ACP4A/21AMP4A ①	21ACP4A/ 21AMP4A ①	21AMP4A ①	12N	① Aluminized ② Silver Screen
	21ACP4A ①	21AMP4/ 21ACP4/21ACP4 ①	21ACP4A ②	21ACP4A ②	21ACP4A ②	12N	
	27EP4 ①	27EP4 ①	27EP4 ②	24CP4 ②		12N	
				27EP4 ②		12D	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▣40	400	22-3597		D125		TM-411	Q-351	TVL-4670
B	▣80	400			BR435			FM-4504	TVA-3601
C	▣30	400							
D	4	350							
C2A	▣4	350	22-3479	AFH4-130-75	D149	FP454.6		Q-443	TVL-4606
B	▣40	400						FM-4504	
C	100	50							
D	▣30	475							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	2-5.6		22-3231		838-6			CT252		
C4	600		22-3577							
C5	800		22-3231	BPD-0008	DD-501	M969	831-501	DC-831	5CA-79	
C6	800		22-3577							
C7	800		22-3577							
C9	3.4		22-3596							
C10	65-6.3		22-3452		838-3		3115-01-GR5	CT265A		
C10	600		22-3577							
C11	300		22-3231	BPD-0008	DD-501	M969	831-501	DC-831	5CA-79	
C12	25		22-3581	BPD-00013	DD-511	CD64	831-511	DC-841	5CA-712	
C13	19		22-3496							
C14	2.8-8		22-3504		838-3		3115-01-GR5	CT265A		
C15	3		22-3454							
C16	5.8		22-3499							
C17	3.4		22-3592							
C18	800		22-3577							
C19	800		22-3577							
C20	3		22-3595							
C21	800		22-3577							
C22	10000		33-3	BPD-01	DD-103	K982	811-01	DC-811	5HK-81	
C23	470		33-6	BPD-00047	DD-471	K060	831-471	UC-5347	5GA-747	
C24	6		22-3481							
C25	17		22-3594							
C26	30		22-3550		TCZ-30	Z038	NP0L-300			
C27	24		22-3515	NP0-DI25	TCZ-24	Z038	NP0L-240		5TCC-Q25	
C28	45		22-3600							
C29	.15	300	22-3147	P388N-15		CUSBP15		PT4015	3TM-P15	
C30	330		22-3309	S2330	D6-331	TP43	GP3K-331	UC-5333	5GA-T33	
C31	470		22-3302	S1470	D6-471	TP46	GP3K-471	UC-5347	5GA-T47	Note 1
C32	1000		22-7	S2000	D6-102	TP52	GP3L-102	DC-831	5HK-D1	
C33	470		22-3302	S1470	D6-471	TP46	GP3K-471	UC-5347	5GA-T47	
C34	1000		22-7	DD6-102	D6-102	K982	801-001	DC-831	5HK-D1	
C35	1000		22-3118	S2000	D6-102	TP52	GP3L-102	DC-831	5HK-D1	
C36	470	500	22-3524	S2470	D6-471	5W5T47	GP3K-471	UC-5347	1FM-347	
C37	470		22-3217	S2470	D6-471	TP46	GP3K-471	UC-5347	1FM-347	
C38	4.8		22-3522							
C39	7		22-3215							
C40	.023	300	22-3271	BPD-02	DF-303	CUSB223	817-03	PT4123	3TM-S23	
C41	47		22-3407	BPD-000047	DD-470	G033	831-470	UC-5447	5CA-Q47	
C42	1	300	22-3177	P388N-1		CUSBP1		PT401	3TM-P1	
C43	10000		33-3	BPD-01	DD-103	K982	811-01	DC-811	5HK-81	
C44A	1000		22-3545	BPD-3X001	DDM-102	DKD69	831-001	DCD-831	5HK-2D1	
B	1000									
C45	3.3		22-3243	NP0-SI3.3	TCZ-3R3	TZ06	NP0A-3R3	ET-5533	5TCC8-V33	
C46	50		22-3460	S250	D6-500	TP35	GP3K-500	UC-545	5CA-Q5	
C47A	1000		22-3553	BPD-3X001	DDM-102	DKD69	813-001	DCD-831	5HK-2D1	
B	1000									
C48	10000		33-3	BPD-01	DD-103	K982	811-01	DC-811	5HK-81	
C49	10		22-3278	BPD-00001	DD-100	G045	831-1D0	UC-541	5CA-Q1	
C50	.047	200	22-3718	BPD-05	DF-503	CUSB247		PT4347	3TM-S47	
C51	680		22-3230	S1680	D6-681	TP50	GP3K-681	UC-5348	5GA-T68	
C52	10000		33-3	BPD-01	DD-103	K982	811-01	DC-811	5HK-81	
C53	100		22-5	DD-0001	DD-101	G042	801-101	UC-541	5CA-71	
C54	100		22-5	DD-0001	DD-101	G042	801-101	UC-581	5CA-71	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C55	.022	600	22-1813	BPD-03	DF-303	CUSB223	817-03	PT4123	6TM-S23	
C56	.047	600	22-1844	BPD-05	DF-503	CUSB247		PT4147	6TM-S47	
C57	1000		22-3598	BPD-001	DD-102	K969	801-001	DC-831	5HK-D1	
C58	100		22-5	BPD-0001	DD-101	G042	801-101	UC-581	5CA-71	
C59	.047	500	22-1844	BPD-05	DF-503	CUSB247		PT4147	5TM-S47	
C60	.0047	1500	22-3599			CUSM247		PT4547	MD-D47	
C61	.1	200	22-3166	P388N-47		CUSBP47		PT4047	3TM-P47	
C62	1.0	120		P388N-1.0		CUSBW1		PT41	2TM-M1	
C63	3300		22-11	BPD-0033	D6-332	E077	811-0033	UC-5333	5EK-D33	
C64	27		22-3296		TCZ-27	Z037	NP0L-270			
C65	.0022	400	22-1803	S12300	D6-232	CUSB232	GP2-333-S221	PT4232	6TM-D22	
C66	.023	400	22-3073	BPD-03	DF-303	CUSB423	817-03	PT4123	6TM-S23	
C67	.33	200	22-3159	P388N-33						
C68	.033	200	22-3132							
C69	.0022	600	22-3161	M64-0022						
C70	.1	400	22-3061	P488N-1		DF-104	CUSBP1		PT401	4TM-P1
C71	.001	600	22-3158	S12000		D6-102	GP2L-102		PT631	6TM-D1
C72	.001	800	22-3126	S12000		D6-102	CUSBD1	GP2L-102	PT631	6TM-D1
C73	.22	200	22-3157	P388N-33			CUSBP33		PT4033	3TM-P33
C74	.023	400	22-3073	BPD-02	DF-303		CUSB423	817-03	PT4123	4TM-S23
C75	100	500	22-1443	M69-0001	D6-101		SR3T1	801-001	MC3235	MB-31
C76	150	500	22-1317	M69-00015	D6-151		SR3T15	811-151	MC3236	MB-315
C77	.001	200	22-3159	S12000	D6-102		CUSBD1	GP2L-102	PT631	6TM-D1
C78	.0047	200	22-1843	M64-0047			DR3D47		MC3645	MB-347
C79	.15	200	22-3156	P388N-15			CUSBP15		PT4015	3TM-P15
C80	.001	400	22-3159	S12000	D6-102		CUSBD1	GP2L-102	PT631	6TM-D1
C81	.1	600	22-3177	P388N-1	DF-104		CUSBP1		PT401	6TM-P1
C82	560	500	22-3125	M64-0068	D6-681		SR3T68	811-681		MB-369
C83	.0015	400	22-1785	S11500	D6-152		CUSBD15	GP2L-152	MC356	6TM-D15
C84	.1000	500	22-3163	M64-001			DR3D1	811-105	MC3255	MB-51
C85	1000		22-3598	BPD-001	DD-102	K969	801-001	DC-831	5HK-D1	
C86	680		22-3367	S2680	D6-681	TP50	831-681		5GA-T68	
C87	330		22-3309	S2330	D6-331	TP43	GP3K-331	UC-5333	5GA-T33	
C88	.0022	400	22-1803	S12300	D6-232	CUSBD23	GP2-333-S22	PT4232	6TM-D22	
C89	90	4000	22-2643						20GA-G75	
C90	75	3000	22-2626			DD80-750			47M-P1	
C91	.1	400	22-3240	P488N-1		DF-104	CUSBP1		PT401	4TM-P1
C92	.15	400	22-3241	P488N-15			CUSBP15		PT4015	4TM-P15
C93	.1	800	22-1841	P588N-1		DF-104	CUSB5P1		PT601	6TM-P1
C94	82	3000				DDSD-820			30GA-Q82	
C95	10000		22-3	BPD-01	DD-103	K982	811-01	DC-811	5HK-81	

Note 1. Some versions use 1000MMF in this application (part #32-7).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-3229	B-70-8	A47-1Meg-Z	Q13-157	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A.
C	Switch		Not Req.	X3-5	SWZ-12	T5-1	U5-38	Attach to R1A.
R2A	5.5Meg	½	63-3246	AB-32 ⋆	A47-7.5MegS⋆	Q11-142 ⋆	U-53 ⋆	Height (Stop at 7.5Meg)
B	Shaft		Not Req.	AK-1	FKS-4/4	RQ	Not Req.	Attach to R1A.
R3A	220KΩ	½	63-3187	AB-46	A47-220K-S	Q11-139	U-53	Brightness
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R3A.
R4A	1Meg	½	63-3278	AB-30	A47-1TK-S	Q11-19	TA1S31	AGC
B	Shaft		Not Req.	AK-1	FKS-1/4	RQ	Not Req.	Attach to R4A.
R5A	75KΩ	½	63-3225	AB-35	A47-75K-S	Q11-135	U-61	Vertical Hold
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R5A.
R6A	1500Ω	½	63-3230	AB-6	A47-1500-S	B11-109	TA1S31	Vertical Linearity
B	1MEg	½	Not Req.	AJ-1	FKS-1/4	GJ-S35 ⋆	UF3EL ⋆	Attach to R6A.
R7A	500KΩ	½	63-3201	SVP-599	A10-500S		TM-1 KH	Bass (Panel)
B	Shaft		Not Req.	Not Req.	RS-2		M5MPK	Treble (Rear)
R8A	1Meg	½	63-3234	F1-53		GJ-S35 ⋆	UF3EL ⋆	Contrast (Wire Wound)
B	250KΩ	½		R3-35			UR3S4A	Attach to R7A.
R9	650Ω	2	63-3187		39-600 ⋆			Fringe Lock
								Attach to R10A.
R9	780Ω	2	63-3284		39-800			1000 fixed minimum
								Bass-used as an alternate in some versions
R10A	7.5Meg	½	63-3219	AB-36	A47-7.5Meg-S	Q11-142	U-52	Treble (Rear)
B	Shaft		Not Req.	AK-1	FKS-1/4	RQ	Not Req.	Attach to R10A.

⋆ Connect a 1Meg resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down).

† Concentrikit Equivalent; K-2 Kit, Base Elements and Shafts; B17-137, P1-128 (Panel)
B13-130, P1-129 (Rear)

‡ Universal Replacement (Mallory Exact Duplicate Part No. UE156T).

⋆ Connect a 100Ω resistor in series with the terminal, and the lead connecting to the same terminal of the original control.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R11	22KΩ	½	63-1841	BTS-22K	
R12	47KΩ	½	63-1856	BTS-47K	
R13	47Ω	½	63-1750	BTS-47	
R14	470KΩ	½	63-1897	BTS-470K	
R15	100KΩ	½	63-1868	BTS-100K	
R16	100KΩ	½	63-1869	BTS-100K	
R17	4700Ω	½	63-1813	BTS-4700	
R18	10KΩ	½	63-1838	BTS-10K	
R19	10KΩ	2	63-3170		
R20	3300Ω	½	63-1800	BTS-3300	
R21	220Ω	½	63-1758	BTS-220	
R22	470Ω	½	63-1772	BTS-470	
R23	68KΩ	½	63-1862	BTS-68K	
R24	100KΩ	½	63-1869	BTS-100K	
R25	22KΩ	½	63-1842	BTS-22K	
R26	2.2MEg	½	63-1926	BTS-2.2Meg	
R27	68Ω	½	63-1737	BTS-68	
R28	470Ω	½	63-1772	BTS-470	
R29	56Ω	½	63-1733	BTS-56	
R30	680Ω	½	63-1821		
R31	27KΩ	½	63-1845	BTS-27K	
R32	10KΩ	½	63-1827		
R33	470Ω	½	63-1772	BTS-470	
R34	120KΩ	½	63-1873	BTS-120K	
R35	120KΩ	½	63-1873	BTS-120K	
R36	15Ω	½	63-1708	BTS-15	
R37	180Ω	½	63-1754	BTS-180	
R38	560Ω	½	63-1756	TP50	
R39	150Ω	½	63-1747	BTS-150	
R40	220Ω 5%	½	63-1756	BTS-220 5%	
R41	680Ω	1	63-2290	BTA-680	
R42	33KΩ	½	63-1848	BTS-33K	
R43	47KΩ	½	63-1855	BTS-47K	
R44	22KΩ	½	63-1666	BTS-22K	
R45	15Ω	½	63-1708	BTS-15	
R46	220KΩ	½	63-1884	BTS-220K	
R47	47KΩ	½	63-1856	BTS-47K	
R48	680KΩ	½	63-1904	BTS-680K	
R49	220KΩ	½	63-1884	BTS-220K	
R50	100KΩ	½	63-1870	BTS-100K	
R51	82KΩ	½	63-1866	BTS-82K	
R52	330KΩ	½	63-1896	BTS-330K	
R53	220KΩ	½	63-1884	BTS-220K	
R54	220KΩ	½	63-1884	BTS-220K	
R55	680KΩ	½	63-1904	BTS-680K	
R56	180KΩ	½	63-2313	BTA-180K	
R57	100KΩ	½	63-1870	BTS-100K	
R58	100KΩ	½	63-1837	BTS-10K	
R59	100Ω	½	63-1788	BTS-100	
R60	680KΩ	½	63-1904	BTS-680K	
R61	220KΩ	½	63-1883	BTS-220K	
R62	22KΩ	2	63-3141	BTB-22K	
R63	68KΩ	½	63-1863	BTS-68K	
R64	220KΩ	½	63-1799	BTS-220K	
R65	82KΩ	½	63-1866	BTS-82K	
R66	68KΩ	½	63-1863	BTS-68K	
R67	120KΩ	½	63-1799	BTS-120K	
R68	68KΩ	½	63-1863	BTS-68K	
R69	68KΩ	½	63-1863	BTS-68K	
R70	150KΩ	½	63-1877	BTS-150K	

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R71	10KΩ	½	63-1838	BTS-10K	
R72	100Ω	½	63-1973	BTS-100	
R73	47KΩ	½	63-3256		
R74	82KΩ	½	63-1783	BTS-820	
R75	10KΩ	½	63-1838	BTS-10K	
R76	2300Ω	½	63-1799	BTS-2300	
R77	18KΩ	½	63-1834	BTS-18K	
R78	470KΩ	½	63-1897	BTS-470K	
R79	10Meg	½	63-1969	BTS-10Meg	
R80	56KΩ	½	63-1859	BTS-56K	
R81	82KΩ	½	63-1866	BTS-82K	
R82	470KΩ	½	63-1897	BTS-470K	
R83	47KΩ	½	63-1857	BTS-47K	
R84	22KΩ	½	63-1841	BTS-22K	
R85	150KΩ	½	63-1876	BTS-150K	
R86	10KΩ	½	63-1838	BTS-10K	
R87	100Ω	½	63-1744	BTS-100	
R88	1.5Meg	½	63-1957	BTS-1.5Meg	
R89	100KΩ	½	63-1869	BTS-100K	
R90	47KΩ	½	63-1855	BTS-47K	
R91	33KΩ	½	63-3288	BTA-330	
R92	100Ω	½	63-1744	BTS-100	
R93	330Ω	½	63-1798	BTS-330	
R94	130KΩ	½	63-1873	BTS-120K	
R95	68KΩ	½	63-1863	BTS-68K	
R96	56Ω	½	63-1775		
R97	560Ω	½	63-1775		
R98	1Meg	½	63-1981		
R99	1Meg	½	63-1981		
R100	1Meg	½	63-1981		
R101	27KΩ	½	63-1845		
R102	100Ω	½	63-1744		
R103	47KΩ	½	63-1194		
R104	10KΩ	8	63-3145		
R105	470Ω	8	63-1771		
R106	33KΩ	8	63-998	BTA-33K	
R107	33KΩ	8	63-1842		
R108	47KΩ	8	63-1856	BTS-47K	
R109	2300Ω	8	63-3184		
R110	130KΩ	8	63-1873	BTS-120K	
R111	100Ω	8	63-1744	BTS-100	
R113	680KΩ	8	63-1905		
R113	100Ω	8	63-1744	BTS-100	
R114	12KΩ	8	63-1823	BTS-12K	
R115	12KΩ	8	63-1823	BTS-12K	
R116	3300Ω	2			Note 1
R117	3300Ω	2			Note 1
R118	470Ω	2	63-1814		
R119	5.6Ω	2	63-3286	BWJ-5.6	
R120	22KΩ	2	63-1942		
R121	8.2Ω	2	63-2916	BW2-8.2	
R122	100KΩ	2	63-1870	BTS-100K	

Note 1. In some versions, R116 and R117 are connected in parallel across T6. When connected in parallel, R116 is 22K, 1W, and R117 is 10K, 2W.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	330VCT	5VAC	12.6VCT	95-1400					
	▣ 2.25A	▣ 380ADC	▣ 6A	▣ 5.4A						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Horiz. Output Trans.	S-22720 ▣					A-8145		
T3	Vert. Output Trans.	95-1435 ▣ 95-1397 ▣					DY-15A ▣	T-14 ▣	T-40-1 ▣
T4A	Yoke(90°) Horiz.(13MH) Vert.(41MH)	DF-606 ▣	MDF-91 ▣	23TD1 ▣					
T5	Horiz. Lin. Coil (1.5-2MH)	S-12342	MWC-2 ▣	20UR1A ▣	WC-7 ▣		WC-14 ▣	WC-13 ▣	
T5A	Width Coil (4-2.4MH)	S-18748	MWC-10 ▣				WC-24 ▣		
B	(3.8-22MH)								

1. Complete assembly includes terminal winding & terminal assembly, Zenith Part No. S-21264, and winding and terminal assembly Zenith Part No. S-22719.
2. Alternate Zenith Part number.
3. Use original yoke damping network.
4. Use original horizontal damping network.
5. Drill new mounting hole, or use original slider, clip, and core.
6. Connect to terminals #3 or #4 & "C7".
7. Drill new mounting hole.
8. Do not use tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T7	6.6KΩ CT	3.8Ω	95-1396						

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	31"	PM	1.5Ω	49-777 ▣ 2.5	3A1BT	① Used in Models T2358E, EU, R, RU, T2360B, U, T2367E, EU, Y, YU, T2383R, RU, and T2671E, EU, R, RU
SP2	10"	PM	3.8Ω	49-764 ▣	10A1D2.2	② Used in Models T2367R, RU and T2391E, EU, R, RU
	12"	PM	3.8Ω	49-778 ▣	12A6A	③ Used in Models T2994EU, HU
	12"	PM	8Ω	49-760 ▣		

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coils	OOCT	OOI					
L2	FM. Choke	0Ω		30-391				
L3	Neut. Coil			30-431				
L4	RF Coil	0Ω		30-537				Channel 13
L5	RF Mixer Grid,Osc.Coils	0Ω						
L6	RF Choke	0Ω		126-764				
L7	Mixer Grid Coil	0Ω		30-538				Channel 13
L8	Osc. Coupling Coil	0Ω		30-541				
L9	RF Coil	.4Ω		S-18859				
L10	Conv. Plate	7.7Ω		S-20923				Tapped ③ 5.4Ω
L11	1st Video IF	.15Ω		S-21019			8322	Includes 68MMF Cap. and 41.25MC Trap
L12	47.25MC Trap	0Ω		S-21718	17-4603*		6236	
L13	45.75MC Trap	0Ω		S-21719	17-4604 *		6235	
L14	2nd Video IF	.1Ω	.1Ω	S-17907			6233 ⋆	
L15	3rd Video IF	.1Ω	.1Ω	S-18993			6233 ⋆	
L16	4th Video IF	.3Ω	.3Ω	S-20623				
L17	Series Peaking Coil	6Ω		S-17913	19-3100	TV-1E	6177	100 Microhenries
L18	Shunt Peaking Coil	5.8Ω		S-21623	19-3160 ⋆	TV-1E4 ⋆	6064 ⋆	160 Microhenries, wound on 2. 7KΩ resistor in series
L19	Series Peaking Coil	1Ω		S-21688	19-1004		4680	6.7 Microhenries
L20A	4.5MC Trap	13.5Ω						
B	1st Sound IF	1.4Ω		S-21492				

ZENITH MODELS T2359E, EU, R, RU, T2360R, U, T2360E, EU, Y, YU, T2383R, RU, T2387R, RU, T2391E, EU, R, RU, T2671E, EU, Y, RU, T2994EU, HU (Ch. 22T20, 22T21 & Preamp. Ch. 17G1)

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PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L21	Series Peaking Coil	5.5Ω		S-21563	19-3125 ♦		6153 ♦	136 Microhenries
L22	2nd Sound IF	.4Ω	4Ω	S-20219	16-3445			
L23	Quadrature Coil	5.3Ω		S-19020	20-1004 †	TV-151 †	1480 †	
L25	Spook Coil	.2Ω		20-528				5.5 Microhenries
L26	RF Choke	.2Ω		S-22777	19-1005		4612	10 Microhenries

* Use trap winding only.
■ Detune trap.
▲ Series with 2.7KΩ resistor.
♦ Parallel with 5.6KΩ resistor.
† Drill mounting hole.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	NOTES
L24	152Ω		S-19743	19-1577		6324			HS-6	Tapped @ 65Ω

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L27	.380ADC	46.5Ω	2.74HY	95-1399					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	1/4A 250V	136-22	83-1883	313.250 (3AG S/B 1/4A)	357001	MDL 1/4	4405

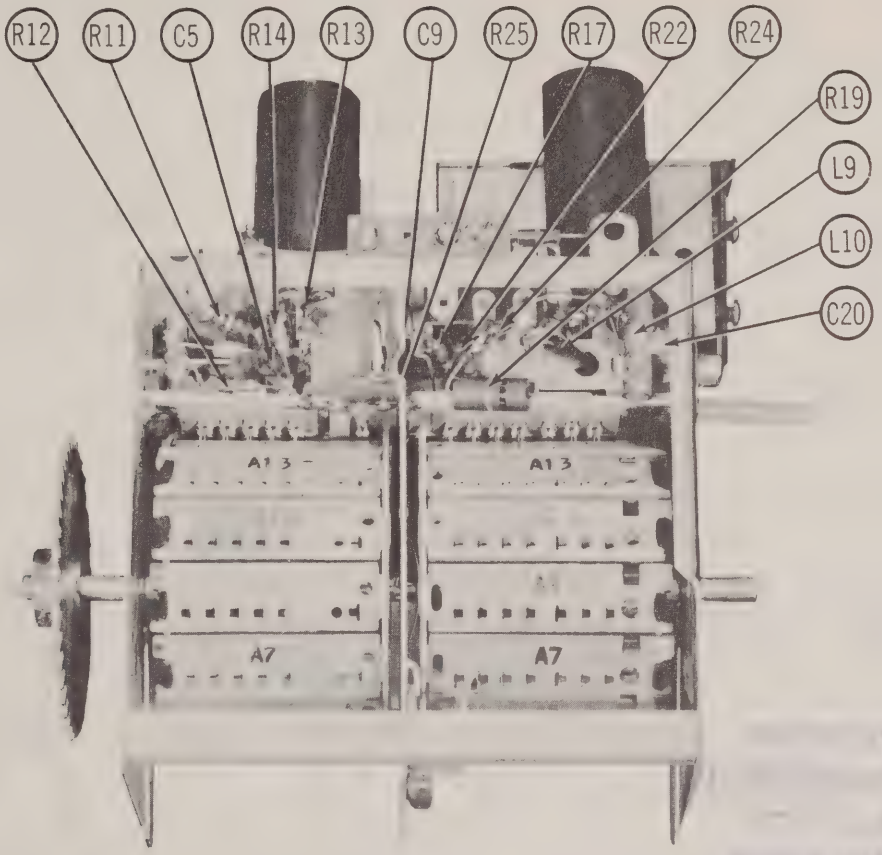
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA SYLVANIA PART No.	NOTES
M2	CK706A	103-1	1N60	Video Det.

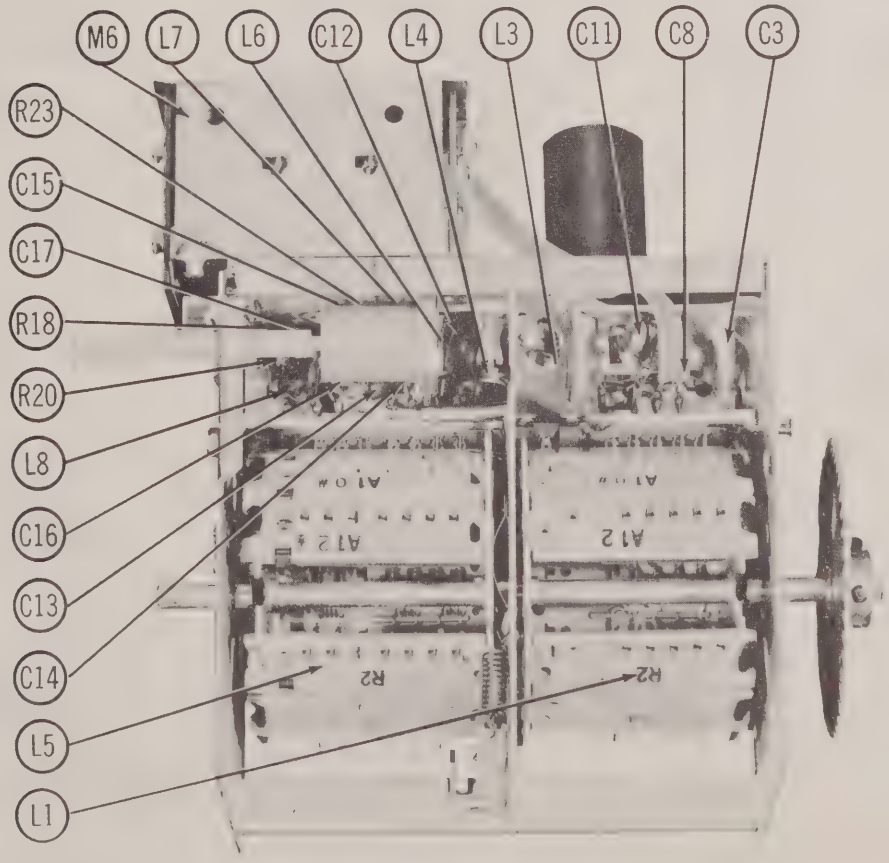
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Dial Light		PR12
M4	Tuner	S21735	VHF-Chassis 22T20, 22T21
	Tuner	S21700 *	VHF-Chassis 22T20U, 22T21U
M5	Tuner	S21864 *	UHF-Chassis 22T20U, 22T21U
M6	Trap		VHF Ant. Input Filter
M7	Video Det. Assy.	S-21686	Includes M2, L16, L17, L18, C38, C39
M8	Switch		TV-Phono (3PDT-Slide Type)
M9	Integrator	87-1	Vertical
M10	Focus Magnet	S22252	Includes Centering Device; Models T2994EU, T2994HU may use alternate Part No. S-20344.
M11	Ion Trap	S17461	All models except T2994EU, T2994HU.
	Ion Trap	S17261	Models T2994EU, T2994HUonly.
M12	Correction Magnet	S18763	Chassis 22T20 only.
	Correction Magnet	S20360	Chassis 22T21 only
M13	Correction Magnet	S18763	Chassis 22T20 only
	Correction Magnet	S20360	Chassis 22T21 only
B1	Trimmer Cap.	22-2398	Horiz. Drive (95MMF-380MMF)
	Cabinet	14-1743E	Models T2359E, EU
	Cabinet	14-1743R	Models T2359R, RU
	Cabinet	14-1752R	Models T2360R, RU
	Cabinet	14-1755E	Models T2367E, EU
	Cabinet	14-1755Y	Models T2367Y, YU
	Cabinet	14-1826R	Models T2383R, RU
	Cabinet	14-1760R	Models T2387R, RU
	Cabinet	14-1761E	Models T2391E, EU
	Cabinet	14-1761R	Models T2391R, RU
	Cabinet	14-1757E	Models T2671E, EU
	Cabinet	14-1757R	Models T2671R, RU
	Cabinet	14-1768E	Models T2994EU
	Cabinet	14-1768H	Model T2994HU
	Knob	S-21883	Channel Selector Assy. -All models except T2994EU, HU
	Knob	S-22009	Channel Selector Assy. -Models T2994EU, HU
	Knob	46-1118	Horiz. Hold
	Knob	46-1182	Vertical Hold & Brightness
	Knob	46-1199	Contrast
	Knob	46-1335	On-off-volume - All models except T2994EU, HU
	Knob	46-1336	On-off-volume - Models T2994EU, HU
	Knob	46-1355	Fine tuning - All models except T2994EU, HU
	Knob	46-1215	Fine tuning - Models T2994EU, HU
	Knob	46-1018	Tone (TV) Bass
	Knob	46-1055	Tone (TV) Treble - All models except T2994EU, HU
	Knob	46-1360	Tone (TV) Treble - Models T2994EU, HU
	Knob	S-19316	Dummy & volume (Radio) Models T2387R, RU, T2371E, EU, R, RU, T2994EU, HU
	Knob	46-1041	Tuning (Radio) Models T2387R, RU, T2391E, EU, R, RU, T2994EU, HU
	Knob	46-1043	Bandswitch (Radio) Models T2387R, RU, T2391E, EU, R, RU, T2994EU, HU
	Knob	46-1153	Tone (Radio) 2 used - Models T2387R, RU, T2391E, EU, R, RU, T2994EU, HU
	Knob	S-22048	Dial (UHF) Models T2994EU, HU
	Knob	S-22024	Tuning (UHF) Models T2994EU, HU

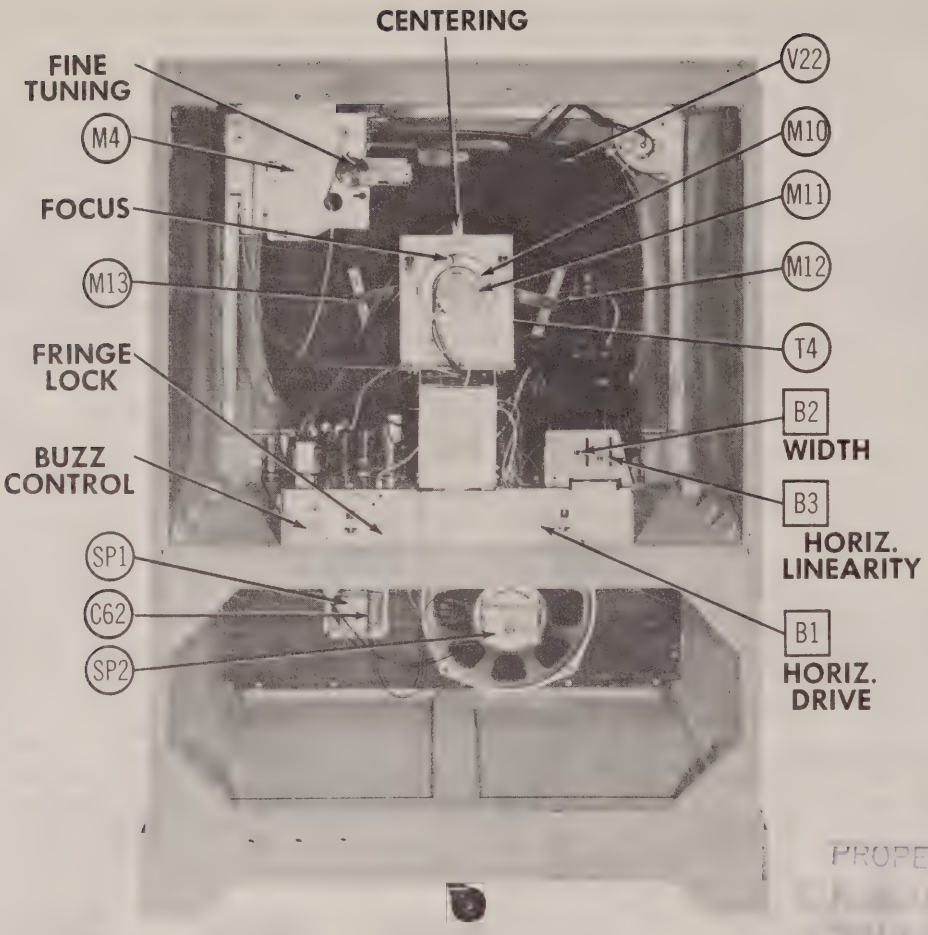
* UHF-VHF Tuner (Part No. S21845) comprised of VHF Tuner S21700 & UHF Tuner S21864.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



PROPERTY OF
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CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

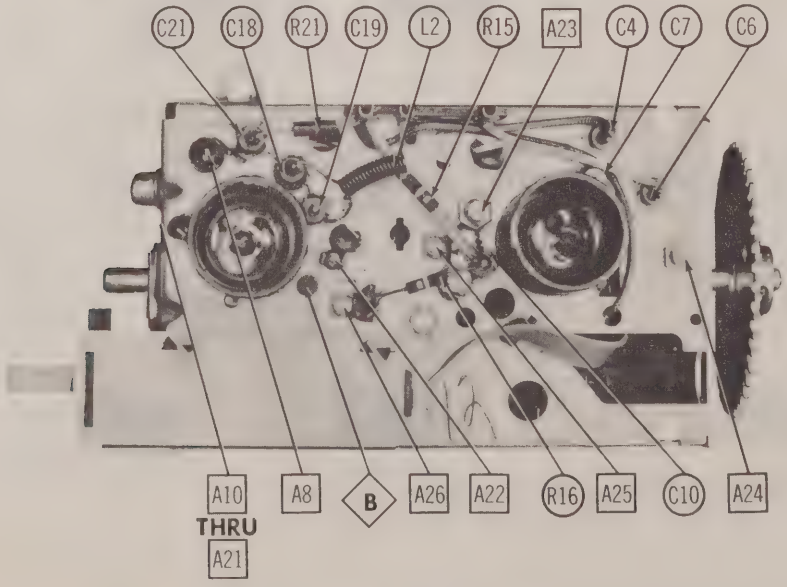
Turn the set on and tune in TV station, preferably a test pattern.

Adjust the horizontal hold (L24) located on front of chassis until picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B1) for greatest picture width.

Adjust the horizontal width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.



RF TUNER TOP VIEW

AMERICAN MOTORS MODEL 8990378 (6MA)

SCHEMATIC COURTESY MOTOROLA INC.

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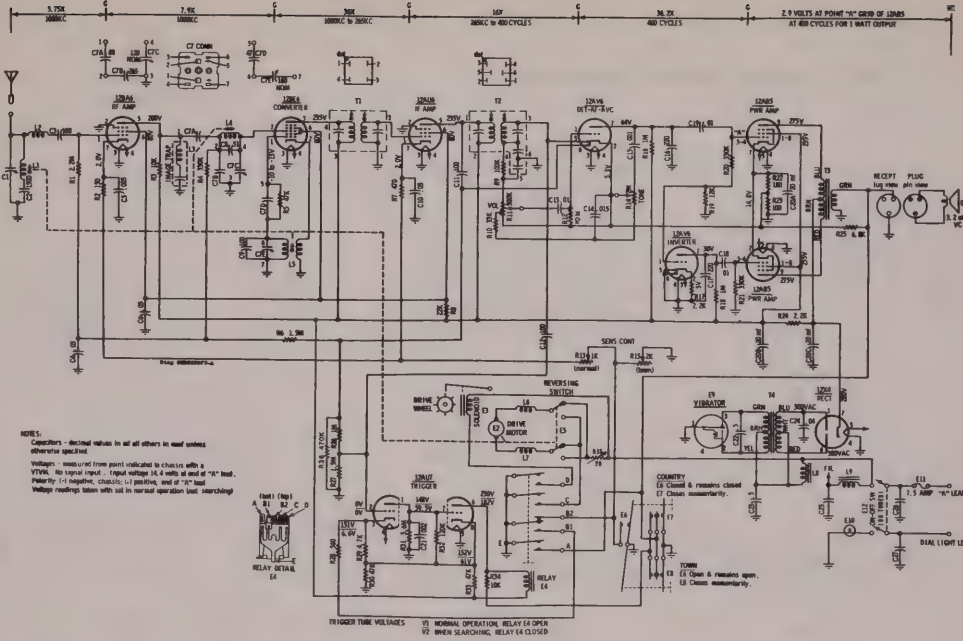

FORD MODEL

69MS (FEF-18805-B)

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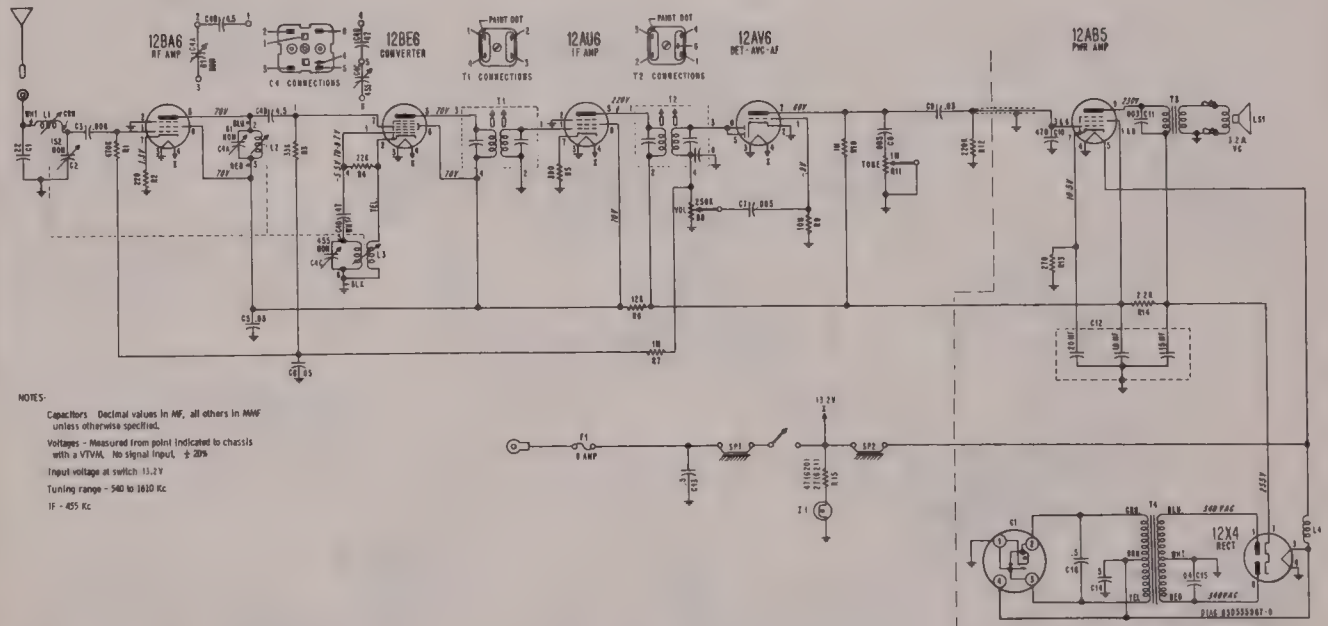
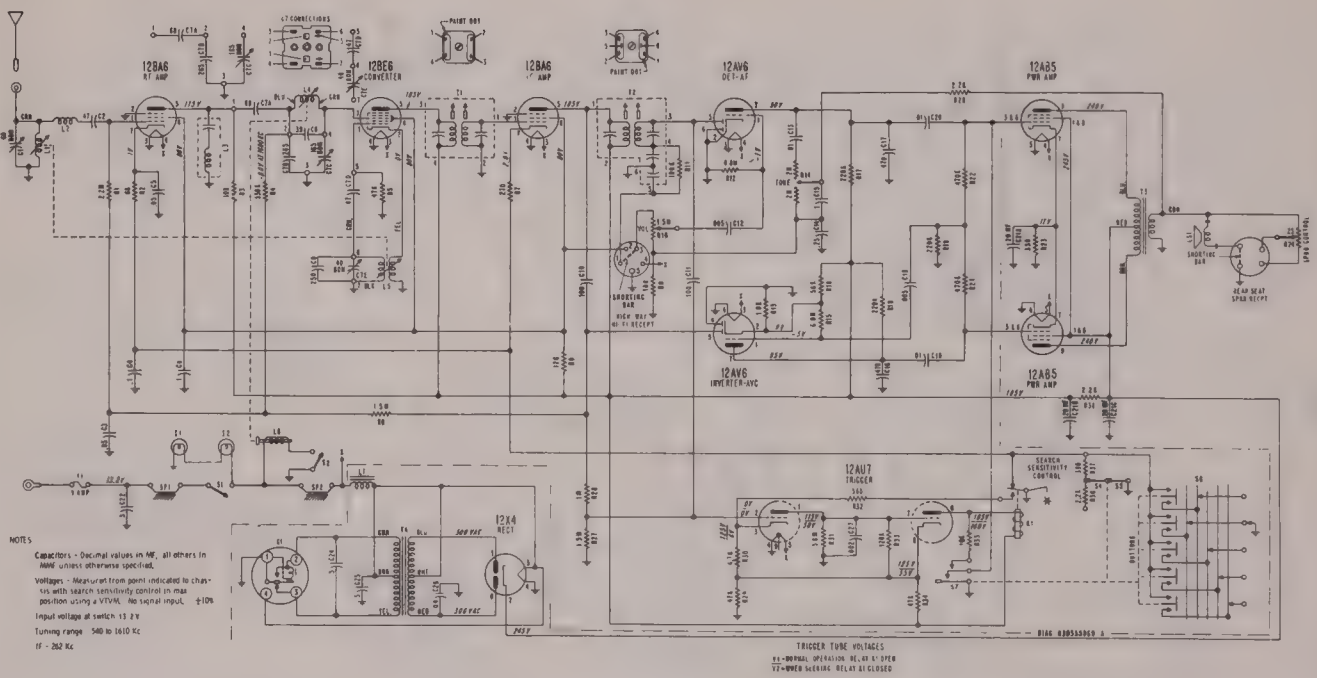


MOPAR MODELS

620
621

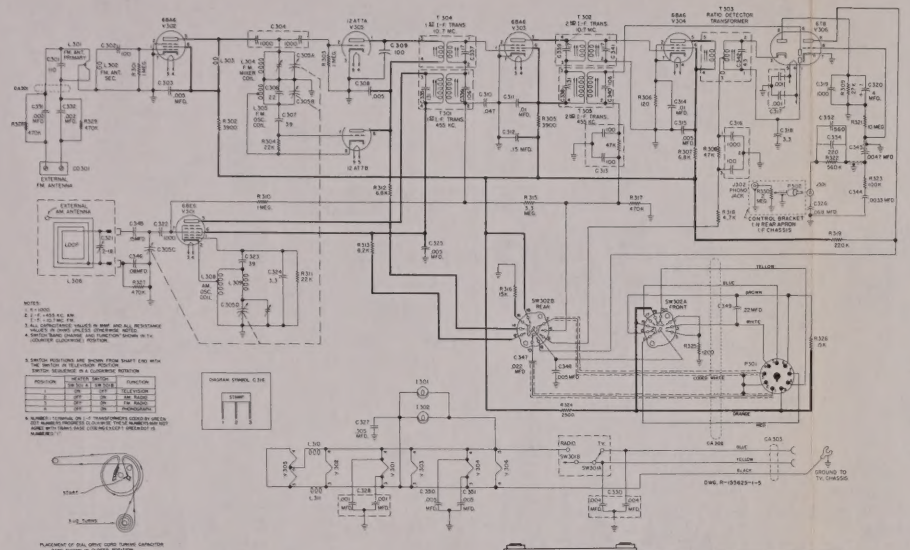
SCHEMATIC COURTESY MOTOROLA INC.



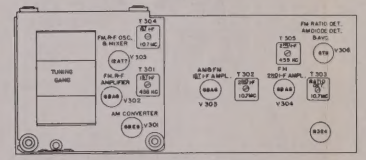
MOPAR MODELS

910
911

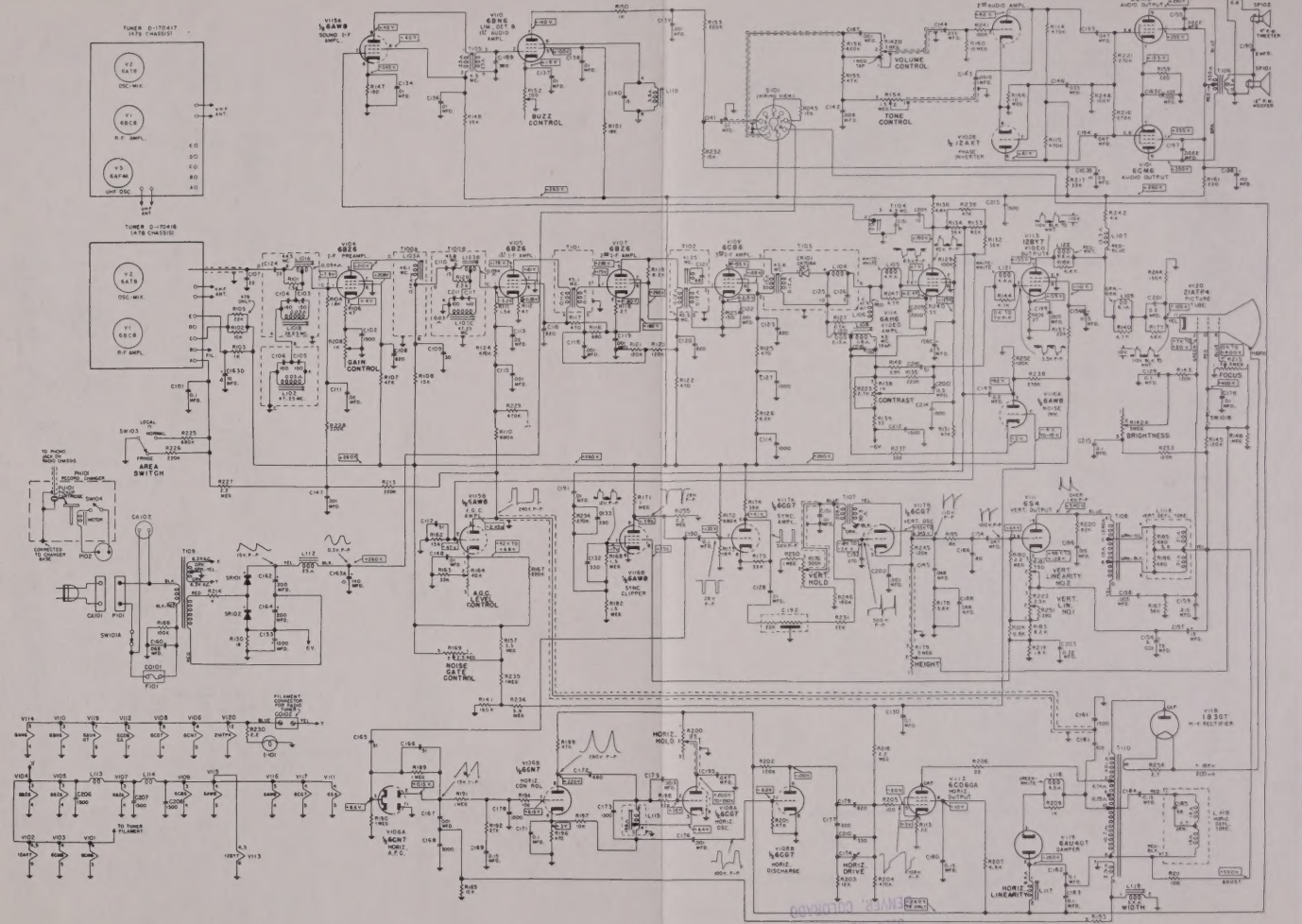
SCHEMATIC COURTESY MOTOROLA INC.



SCHEMATIC WIRING DIAGRAM
CHASSIS 362-2



TUBE LAYOUT, CHASSIS 362-2



CROSLEY MODELS

JR-21PDBF	(Ch. 478, 362-2)
JR-21PDBU	(Ch. 479, 362-2)
JR-21PDMF	(Ch. 478, 362-2)
JR-21PDMU	(Ch. 479, 362-2)

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L. F. BLANKENSHIP
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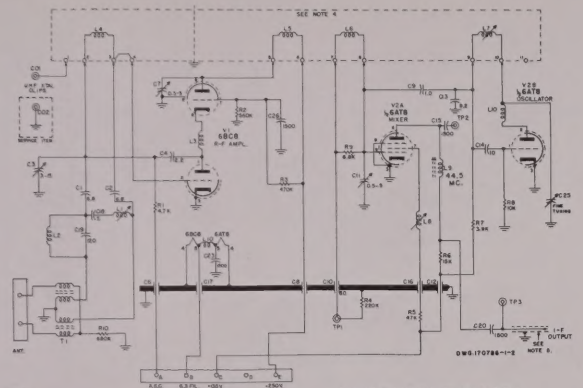
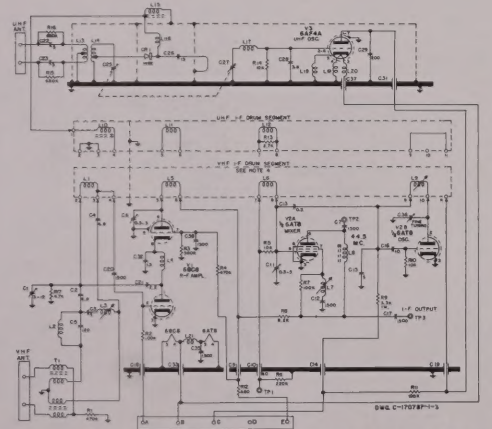


VHF TURRET TUNER

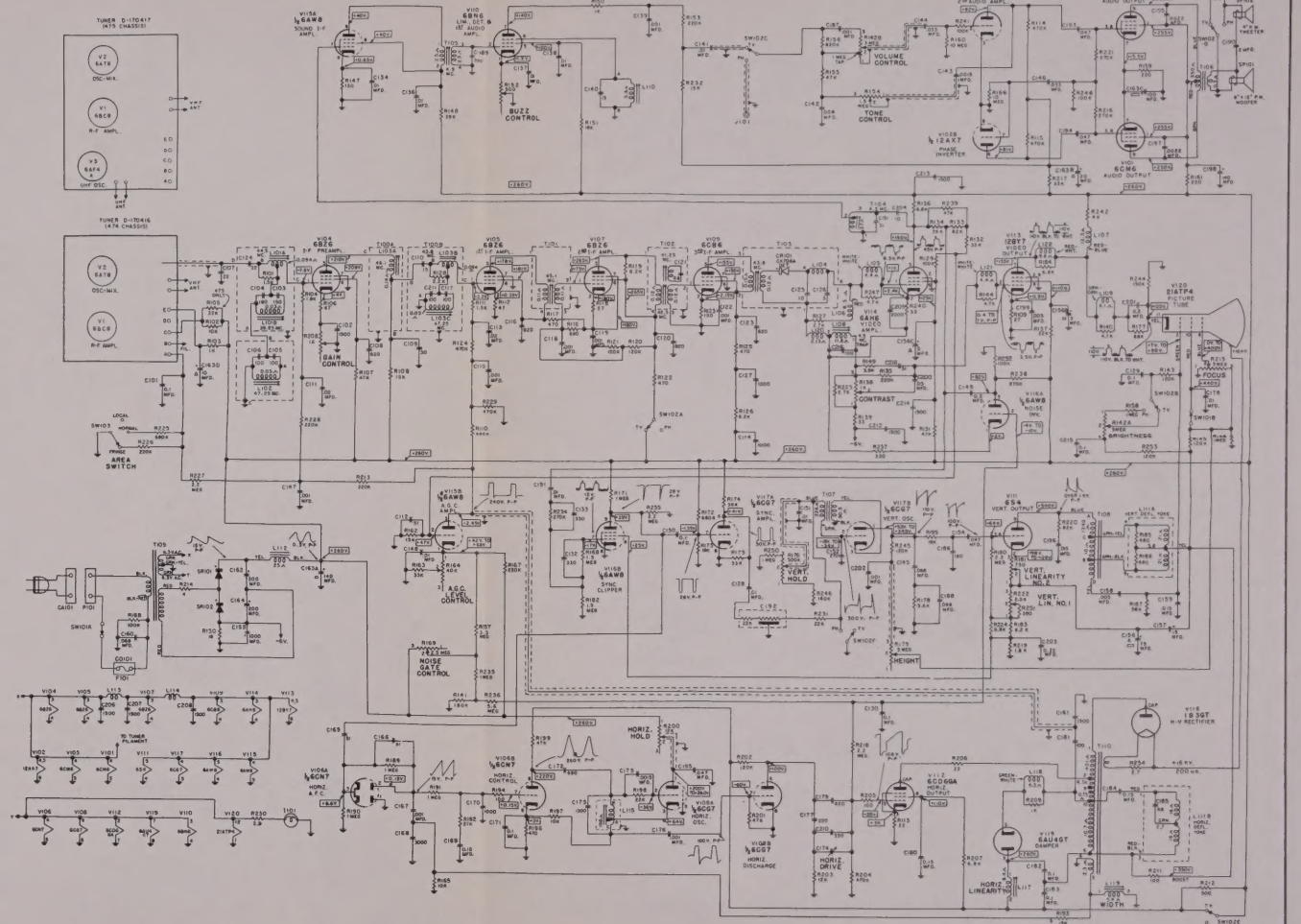
PART NO. 170416-1



UHF-VHF TURRET TUNER

PART NO. 170417-1

CROSLEY MODELS

JR-21CDBF	(Ch. 474)
JR-21CDBU	(Ch. 475)
JR-21CDTMF	(Ch. 474)
JR-21CDTMU	(Ch. 475)
JR-21CGDBF	(Ch. 474)
JR-21CGDBU	(Ch. 475)

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CROSLEY HOME APPLIANCES
DIVISION, AVCO Mfg. Corp.